THE NEWSWEEKLY OF INFORMATION SYSTEMS MANAGEMENT
October 1, 1990 · Vol. XXIV · No. 40 · 136 Pages · $2/Copy · $48/Year

COMPUTERWORLD

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Chill out your drive: IBM plans to replace all fan units on 3990 disk drives shipped between May and August. Page 29.

IBM switch repeals 3090 fee

Eases cost of adding third-party memory

BY ROSEMARY HAMILTON
CW STAFF

IBM backed off a controversial memory upgrade policy late last week and canceled a $57,100 charge it announced last month for 3090J model users who purchased memory from third-party providers.

The company reversed its position Friday afternoon, after spending considerable time explaining that it was willing to offer users options for upgrading and was not intending to restrict anyone.

"We decided it wasn't worth it," said John Henrickson, director of data systems marketing, after the fee cancellation was disclosed. "We were putting a lot of hassle into the marketplace for very little dollars. We decided to let it go."

Policy short-lived

The short-lived upgrade policy, announced Sept. 5, prompted memory product competitors to charge that IBM was trying to discourage customers from doing business with third-party providers. The controversy stemmed from an engineering change earlier this year that provided functional improvements but also eliminated the ability of J models to recognize up to 512M bytes of main memory.

The modification at issue is IBM's Engineering Change 570, which some observers said they believed was mandatory, requiring users to install an additional thermal conduction module if they later added memory beyond a 128M-byte line.

While the J models had a built-in ability to recognize and manage up to 512M bytes of main

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Germans hear busy signals

BY PATRICIA KEEFE
CW STAFF

When the last swig of celebratory beer has been washed down, "One Germany" will turn its attention to fixing what many see as its biggest obstacle to revitalizing the East: a tattered and aging telecommunications system that barely serves a minute percentage of the East German population.

"You can't get there from here" takes on new meaning when calling East Germany from West Germany. East Berlin may be just a hop, skip and a jump over the Wall, but as one exasperated East German official noted last week, "It is impossible to get through!"

Callers from within East German borders do not fare much better. For one thing, there are only 1.2 million telephone connections for East Germany's entire population of 17 million; 7.2 million connections are needed.

Moreover, even if every business and household was on-line, the reliability of East Germany's rapidly disintegrating analog system, which is estimated to be at least 50 years old, is tenuous at best.

"If you want data transferred within the hour, it's a very risky to let your business [rely] on dial-up lines," said Helmut Gumbel, an analyst at Gartner Group Europe.

"A telex is the only safe form of communication," agreed IS consultant Reiner Michl.

Not only is there no control over when a call can be placed, but there are no leased lines, no packet-switched networks and no cellular telephone service. In addition, data transmission moves along at a slow 1,200 bit/sec. However, even though the government has a monopoly on all voice communications, it is undergoing deregulation.

This is disheartening news for

Continued on page 130

Sheila Johnson

Sgt. Wendell Beppler *is assistant supervisor of the 324th Data Processing Unit. Beppler, along with 44 other data processing experts and an IBM 4341, awaits orders to ship out to Saudi Arabia*

Mobile 4341 unit called up

BY MAURA J. HARRINGTON
CW STAFF

FORT DEVENS, Mass. — Weekend warriors no longer, members of an Army Reserve data processing unit stationed here were processed for mobilization last week, expecting to ship out soon along with their mobile IBM 4341 for service in Saudi Arabia.

Mobilization procedures for "Operation Desert Shield" in the Middle East pushed the 45 members of the 324th Data Processing Army Reserve Unit through various lines last week to update wills, dog tags and identification cards; get X-rays of the teeth and jaw lines; and take care of other, more personal matters, such as full-time day care for children of single parents.

"We knew when we first signed up for the reserves that this was always a possibility . . . and our skills are needed over there," said Major John Welch, an information systems manager when wearing civilian clothes and commander of the 324th DPU — the first reserve DPU of four in the U.S. to be called up for active duty.

"The odds are, this unit is going [to Saudi Arabia], but they could end up stateside at Fort Bragg [N.C.] as a refill unit," an Army spokesman said. "They'll get their orders after Oct. 1 as to exactly where they'll be going."

Continued on page 8

Windows 3.0 users look for that ideal fit

BY JAMES DALY
CW STAFF

Like a new snakeskin jacket that looks terrific but feels snug under the arms, Microsoft Corp.'s Windows 3.0 is drawing raves for its looks — but users say it still needs a little tailoring before it fits just right.

A perfect fit is crucial to users who already have ambitious plans for Version 3.0. "In the next five years, we want to shift all our processing from the mainframe down to desktop PCs and use Windows to access that information," said Dale Smith, a program manager at General Electric Co. in Schenectady, N.Y. "Eventually, we just want to use the mainframe as the data server."

Four months after its introduction, the graphical user interface has received an enthusiastic welcome from early buyers who appreciate the ease with which it helps them navigate the DOS world. Now those buyers would like a few alterations before they continue with their ambitious plans for corporatewide implementation.

Users contacted by *Computerworld* generally agreed that until the rough edges of Version 3.0 are smoothed out, its use will

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The Fifth Wave

"I HAVENT LOCATED THE PROBLEM YET."

EXECUTIVE BRIEFING

■ **Global competitiveness requires coordination** on a scale that cannot be achieved with isolated outposts, which makes unification and standardization of information key priorities for many companies. Telecommunications networks and information systems are the glue that holds corporate global business strategies together, but producing cohesion without strangling local initiative and creating a unified network across multiple borders can be dauntingly sticky. **Page 91.**

■ **Thousands of federal IS jobs could be on the line** as the Bush administration and Congress try to reach a budget compromise. All federal agencies anticipate unpaid furloughs for some employees. Federal IS managers are prepared for belt-tightening, but worst-case scenarios call for canceling major computer purchases and systems development plans — even shutting down noncritical applications. **Page 133.**

■ **Outmoded, unreliable and scarce,** East Germany's telecommunications system is proving a major barrier to business opportunities for U.S. and European companies. Although the two Germanys will be officially reunited this week, the Bundespost's plan to overhaul the telecommunications infrastructure will take seven years, with satellite bypass offered to Western firms in the meantime. **Page 1.**

■ **Oracle customers are not panicked** by the software firm's worse-than-expected losses, but they are concerned about how Oracle management was apparently blindsided by the financial debacle. Some attendees at the annual user group conference saw a silver lining: Management will now focus more on products and less on growth. **Page 4.**

■ **Army Reserve IS professionals** may be moving from the data centers of Massachusetts to the deserts of Saudi Arabia after President Bush called the 324th Data Processing Reserve Unit to active duty. Forty-five men and women and a mobile IBM 4381 from Fort Devens, Mass., may soon be supporting communications for Operation Desert Shield. **Page 1.**

■ **Coinciding with German reunification** is the corporate merger between West Germany's largest technology firms, Siemens and Nixdorf. Analysts give the huge new company strong odds to succeed in the rapidly growing European market. **Page 131.**

■ **A LAN support dilemma** confronts many decentralized firms. They want to push networks out to the local level, but users are notoriously lax about LAN support. It falls to IS to achieve a balance between local autonomy and some form of central oversight. **Page 45.**

■ **The key to improved IS productivity** is not always the latest fad, but an unglamorous basic: good software logic and documentation. Using both keeps systems useful even if enhancements and redesigns are needed to keep pace with changing corporate needs. The result is that programmers and analysts are freed up for new tasks. **Page 101.**

■ **On-site this week:** A bilingual telephone voice-recognition system allows French Riviera visitors to verbally browse through a database of tourist options in Nice, France. **Page 29.** Closer to home, Papa Gino's hopes to challenge Domino's in the New England pizza delivery business with PCs in its restaurants that log and track phone-in orders. **Page 40.** Customer convenience is also the driver for the California Department of Motor Vehicles, which has installed ATM-like terminals for motorists to renew their licenses without waiting in line. **Page 39.** A voice synthesizer-equipped Wang PC helps a blind attorney in Raleigh, N.C., do his job. **Page 41.**

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Oracle stock takes stunning dive

CEO says emphasis will be on quality and support in wake of $35.9M loss

BY JEAN S. BOZMAN
CW STAFF

ANAHEIM, Calif. — Oracle Systems Corp. executives shed new light on the firm's finances last week, announcing that the company had lost $35.9 million in the 90 days ended Aug. 31 — a staggering figure that exceeded recent projections.

"There was a $45 million shortfall in product sales by Oracle U.S.A.," Chief Executive Officer Larry Ellison said Tuesday. "There was a 72% sequential drop from the fourth quarter to the first quarter, and a soft U.S. economy cannot possibly explain a drop like that."

Ellison blamed a May reorganization of the Oracle U.S.A. division, along with faulty sales projections, for the failure.

Leaders in the Oracle user community were still analyzing the new financial revelations (see chart) as they considered the impact on Oracle product development — and on information systems careers linked to Oracle software.

"My concern is that management is working in a reactionary mode and not addressing the systemic problems," said Warren Cappa, president of the Mid-Atlantic Oracle Users Group and a senior systems manager at Science Applications International Corp. in McLean, Va. "They've made strong management changes and put drastic cost-cutting measures in place. But I'm not sure that the management difficulties have been resolved enough so that new problems, such as a recession, could be easily handled."

Users questioned at the International Oracle Users Group meeting last week were largely unaware of the financial revelations. Some said they were unconcerned, but even those who anticipate tough times ahead for their vendor remained stoic. "What are you going to do when you have users to support?" one software administrator from an East Coast pharmaceuticals firm asked. "You have to go on, no matter what happens."

Even Ellison, who founded Oracle in 1977, agreed that the emphasis must now be on product quality and customer support rather than on market share.

Financial analysts, already stunned by the former highflier's precipitous stock drop — falling from a 52-week high of $28 per share to the $6 range last week — were unsure how soon the firm would recover. "It's going to take many quarters of consistent growth before I'll be convinced that they're back on track," said David Bayer, a vice-president of research at Montgomery Securities in San Francisco.

The first-ever loss for the $971 million company was far more than the $27 million projected on the basis of Oracle financial statements just two weeks ago. Since then, there has been a hiring freeze, a purchasing freeze and another restructuring of the Oracle U.S.A. division, which Ellison pinpointed as the source of the troubles.

Big changes in the works

Last week, Ellison outlined a radically changing Oracle business, one in which U.S. sales are being eclipsed by European sales at a rapid pace — with Unix products among the big sellers.

"Essentially, all our growth will come in Europe, which expanded its business by 60% last year," he said. "Our expenses are going to be reduced to correspond to a worldwide growth plan of 25%, regardless of how good the second-quarter indicators look, and they look very good."

According to Ellison, he expected a second-quarter rebound largely because of an unprecedented "overhang" of business that had not closed in the first quarter.

In an effort to spur a return to profitability, Ellison has slashed two layers of sales management (CW, Sept. 24), ordered a 10% reduction for the 4,000-person domestic work force and stopped hiring, with few exceptions. The firm took a one-time charge of $25 million to cover the costs of severance pay for the laid-off workers, build up its bad-debt reserve and cover a $4 million currency-exchange "mistake."

However, many observers said they remain unsure of the firm's growth prospects.

"It's a question of how much is enough," said Charles Phillips, a senior analyst at Soundview Financial Group, Inc. in Stamford, Conn., who was also present at the meeting. "They were planning on much higher growth, and it's hard for the people who founded this company and built it on high growth rates to accept the need to focus on profitability and quality rather than on market share."

Evaporating fortunes

Oracle's revenue from all its product lines have dropped off dramatically

ORACLE

Estimated product line revenue (in millions)

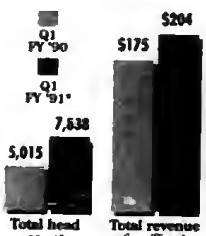
Product line	FY '90 Q1	Q2	Q3	Q4	FY '91* Q1
[illegible]	$86	$114	$112	$114	
DEC VMS	$66	$59	$74	$88	$44
[illegible]	$13	$4	$10	$20	
Unix	$24	$58	$58	$101	$49
PC	$11	$12	$16	$26	

*Projected

Source: Oracle Systems Corp. CW Chart: Paul Mock

Bottom-line expenses

Slower growth has stifled Oracle's ability to fund a more than 50% increase in personnel during the past year



Source: Oracle Systems Corp.

The good news: Streamlined support

BY JEAN S. BOZMAN
CW STAFF

Although overshadowed by Oracle's financial news, significant product news was made at last week's International Oracle Users Group convention in Anaheim, Calif.

Largely in response to user complaints about long waiting times, Oracle announced that it was revamping its telephone call-in support service. Based on a voice-mail technology, Oracle Real-Time Support Services (RTSS) is programmed to route the call to the appropriate technician without stopping first at the junior-level staff members who used to provide Level 1 support, Oracle said. The service went on-line last week at no additional cost to customers, the company added.

"The new system gives customers access to our most experienced people rather than to our least experienced people," said Doug Allred, vice-president of Oracle's systems and support group. "We have also shifted our hiring to put more senior people on staff."

It is unclear how RTSS would be affected by Oracle's current hiring freeze, but the technical support staff grew from 140 technicians to 220 technicians during 1990, Allred said.

The real-time support announcement was well received at the convention, where many users complained of wait times ranging from one hour to several days before critical technical questions were answered. Some users had already tried the revamped system and found it far from perfect.

"I called several days ago, was put on hold and told they'd have to call me back," said one Silicon Valley user. "That's not much of an improvement."

Until now, complete 24-hour support was provided only for Oracle's top customers, who pay a maintenance fee equal to 22% of the cost of their Oracle relational database management system license fee.

Oracle executives also detailed some future products, including the following:

- Oracle Version 6.2, which contains fixes that allow Version 6.0 to run on Digital Equipment Corp. Vaxclusters, is due out by year's end. The original Version 6.0 software caused Vaxclusters to "thrash," Oracle executives have said, and was withdrawn from the market last year.
- Oracle Version 7.0, announced at last year's meeting, will be in alpha-test sites within Oracle by Jan. 1, according to Oracle CEO Larry Ellison. Beta-test sites should begin receiving Version 7.0, which reportedly supports transparent processing in distributed networks, shortly thereafter.
- The Oracle Toolkit for applications developers will soon support a wider variety of graphical user interfaces, said Jerry Baker, senior vice-president at Oracle's Product Division.
- SQL*Forms 3.0 for the IBM MVS operating system will be available in beta-test form next month, Oracle product managers told users. But the software is long overdue, many users said, since SQL*Forms 3.0 was shipped for the DEC VAX computer last December.

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COMPUTER ASSOCIATES

NEWS SHORTS

Meyer fills First Boston post

First Boston Corp.'s top information systems position, vacant since Eugene Bedell took over computer-aided software engineering spin-off Seer Technologies in March, was filled last week by Charles H. Meyer, a 20-year Wall Street IS veteran. Meyer, 43, was named chief information officer and managing director. Meyer had been chief operating officer at Tech Partners, a computerized equity arbitrage trading firm. His experience includes positions at Salomon Brothers, Inc., Morgan Stanley Group, Inc., the former Lehman Brothers and consultancy Arthur Young.

Activists sue FBI

Computer Professionals for Social Responsibility (CPSR), a Palo Alto, Calif.-based group, recently filed a lawsuit seeking to force the Federal Bureau of Investigation to disclose whether it has been monitoring the computer bulletin boards of political and advocacy organizations. CPSR said it filed suit because the FBI had not responded to its August 1989 request for the records under the Freedom of Information Act. The FBI is expected to respond to the lawsuit in mid-October.

Integrator adds commercial unit

Syscorex Information Systems, Inc., a Falls Church, Va.-based systems integrator in the government market, will announce formation of a commercial systems integration division this week. The division, which promises to work with corporate IS managers to implement multivendor open systems and networks, will be headed by Kathleen M. Sperl. Another company branching out into the commercial sector last week was IDC Washington, Inc., a Vienna, Va.-based market research firm that focuses on the federal government. The company changed its name to Information Strategies Group and will provide consulting and research services for users and vendors in several vertical markets.

Intel works on RISC ports

After getting a late start in the reduced instruction set computing (RISC) field, Intel Corp., with its I860 RISC processor, announced a group to help port software to its RISC architecture. Mass860 will offer verification and compatibility testing for software and joint marketing programs.

Ask/Ingres deal progresses

Ask Computer Systems, Inc. pressed its bid last week to buy Ingres Corp., despite a stockholder suit. Shareholder James Lemmane of Florida owns 9.7% of Ask stock and seeks to stop Ask from issuing $60 million in stock to Electronic Data Systems Corp. and Hewlett-Packard Co. In other developments, the firms said the deal had cleared antitrust hurdles, and EDS announced plans to sell Ask software.

D&B adds packages

Dun & Bradstreet Software announced last week that it has ported its AMAPS manufacturing resource planning system to run on IBM's Application System/400 midrange system. Prices start at $150,000. D&B is expected to announce a personal computer version of its human resources package this week. Called The Flex Resource, the product is designed to handle flexible spending account procedures. The Flex Resource is available now with prices starting at $10,000.

Met Life begins shift

Metropolitan Life Insurance Co. has begun moving some IS staff and other personnel from New York to Atlanta. About 100 people in the Investment Systems and Technology Division have already moved, according to a Met Life source, and another 200 are scheduled to make the move by February. Met Life denied published reports that said the company would move its 400 corporate IS staff members to upstate New York.

More news briefs on page 132

IBM, university pact prompts probe

BY RICHARD PASTORE
CW STAFF

MADISON, Wis. — Conflict of interest charges late last month prompted an investigation of the University of Wisconsin's recent IBM 3090 mainframe purchase and the resignation of a dean who was paid by IBM for consulting work and whose department would benefit from a proposed imaging system gift from IBM.

A state senator last month broached the possibility of an improper connection between a University of Wisconsin at Madison mainframe contract awarded to IBM and a library dean who is a paid part-time IBM consultant.

University officials initially denied any conflict of interest but two weeks ago launched an internal investigation. At the same time, Library Services Dean Kaye Gapen resigned her position, stating that conflict of interest allegations made it impossible for her to do her job effectively.

The university "admitted there was a connection between the mainframe contract and the library deal," said Sen. Lynn Adelman (D-New Berlin). University employees reportedly brought the matter before Adelman, who chairs the Senate Judiciary and Consumer Affairs Committee.

An IBM spokesman denied any relationship between the mainframe, library system and Gapen. "People are linking things that are unrelated," spokesman Mark Holcomb said. "The separate proposal brought by the university to jointly work on imaging technology is unrelated to the 3090 purchase."

Adelman contends that wording in IBM's bid for a 3090 Model 200J refers specifically to imaging technology and may have unethically influenced the awarding of the contract. The university reportedly chose IBM over competing bids by Amdahl Corp., Encore Computer Corp. and Hitachi Data Systems Corp.

Adelman has also alleged that Gapen was deeply involved in negotiations for the library system, violating state ethics codes regarding conflicts of interest.

Gapen could not be reached for comment.

Jack Duwe, the university's director of administrative data processing, said IBM discounted its mainframe bid in return for university-generated reports on imaging technology. The discount did influence the awarding of the contract, he said, but he denied that Gapen influenced the decision.

Wisconsin's Sen. Adelman

"IBM chose to include [in its mainframe bid] a substantial discount associated with the university's preparing some reports on image technology. We determined that it was a real value to the university and included that in our evaluation," Duwe said. "Kaye [Gapen] was not a player in that."

Holcomb said "software credits" for imaging reports were included in IBM's bid for the mainframe. "We wanted that software credit evaluated as part of our bid, but the two projects aren't linked," he said. The imaging reports can be generated by systems already installed at the university and do not depend on the proposed library imaging project, he said.

Holcomb also confirmed that IBM employed Gapen as a part-time consultant to speak to potential customers about library applications and imaging technology. "But nothing that IBM did in that relationship was in any way intended to influence what Dean Gapen did in her official duties," he stated.

Officials at other state universities said they operate under strict guidelines that discourage bid influencing by a vendor.

"The state is very strict about keeping a level playing field between competing vendors," said Joseph Ullman, assistant vice-president of administrative computing services at the University of Virginia. State overseers "want a fair decision based on criteria that all vendors have an opportunity to respond to."

Conflict of interest is a major area of concern at most state institutions, but university information systems officials said it is common for staff to be on the payroll of major vendors. "You can't find a school that doesn't have someone" on a supplier's payroll, said Ronald Schoenau, director of the Northeast Regional Data Center for Florida's state colleges.

Pending the outcome of the investigation, the joint IBM-university library system proposal awaits approval by the board of regents. A scheduled legislative audit of the mainframe contract is also on hold.

Switch

FROM PAGE 1

memory, the engineering change would reduce memory recognition up to 128M bytes or whatever currently existed on the system.

Third-party memory suppliers claimed the Sept. 5 policy put their products at a disadvantage [CW, Sept. 24]. If a user bought memory upgrades from IBM, the cost of the additional TCM was rolled into the upgrade price; if they went to the used or third-party market for memory, they would be charged $57,100 for the TCM.

Users have an out

Prior to the decision to terminate the TCM charge, Henrickson said last week that users were not required to install EC 570 and that if they had done so without fully understanding it, IBM would adjust their systems.

"We want to make sure our customers understand . . . and if anyone made a decision to install EC 570 prior to us being able to describe it clearly to them, we will go back and make any changes," Henrickson said. "If there's something we did that our customers didn't understand, we will go back and fix it."

Industry consultants and memory providers were surprised at that IBM declaration.

"That's apparently a departure from the earlier position that stated EC 570 was a mandatory EC," said Paul Noble, a vice-president at memory board maker EMC Corp.

When the upgrade policy was announced, IBM also reduced memory upgrade prices from approximately $6,000 per megabyte to $4,000 per megabyte. As it turns out, the third-party prices were still less than IBM's prices — even with the additional TCM cost rolled in — but the IBM policy narrowed the difference between the two.

Prior to this policy, J model users could buy additional memory from any source — IBM, leasing companies or third-party providers — without having to bring in an additional TCM.

The additional TCM was not just a change in memory pricing policy, according to Henrickson. It was required because of EC 570, which, he said, provided various functional boosts, including improvements to PR/SM, which is a capability to create logical partitions on the processor. But in providing more features for these functions, IBM had to reduce the memory management capability on this TCM.

Therefore, if a user added more memory, an additional TCM would be required to recognize and manage the added memory or perform a function that had once been built into the system.

Without this EC, a 3090J model installed prior to Sept. 5 continues to have the ability to recognize up to 512M bytes of main memory.

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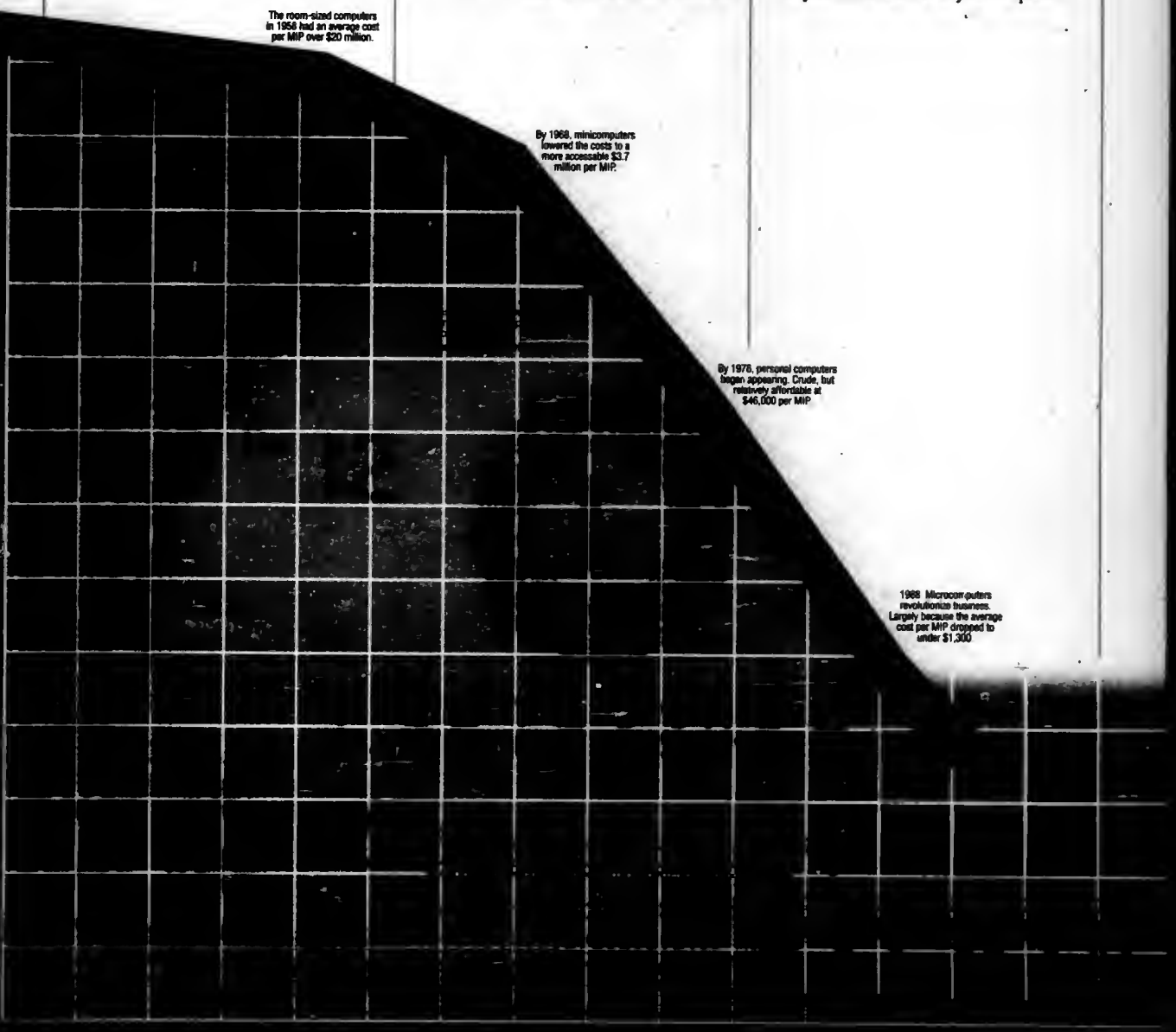

Mobile 4341

FROM PAGE 1

he added.

The 324th DPU includes 19 women and 26 men ranging from ages 18 to 58. All are from the East Coast, and most are from Massachusetts. Of those registering last week at Fort Devens, all knew their responsibilities as members of the 324th DPU.

Mobile communications units have been part of Army missions since before World War I, according to Sergeant Major James Dillon, the highest ranking enlisted man in the 324th DPU. "But this is the first time that a mobile systems unit with the automation of this caliber has been deployed on an overseas mission." Before this, Dillon said, the DPU mobile units generally consisted of people processing papers by hand or on personal computers.

"The 324th will mostly be taking care of inventory control for the staff there, including inventory supply, personnel management, financial management, medical applications and transportation management," Welch said.

While all of the soldiers in the 324th DPU are well aware of their duty and are willing to serve, real-life concerns and fears continued to race through their minds as they prepared for the worst.

"When all of this started to happen [in the Middle East], I kind of got the feeling we would be called up," said First Lieutenant Debbie Wilson, acting executive officer for the unit.

Wilson is highly regarded by her peers in the reserve unit and in her civilian life. She works as the PC coordinator at Norfolk & Dedham Mutual Fire Insurance Co. in Dedham, Mass. Wilson, 25, lives with her parents in Dedham.

"Debbie is an extremely bright and hard-working professional," said Leon Hebert, vice-president of services at Norfolk & Dedham and her boss.

"I was in the Navy Reserves during the Korean War, so I'm well aware of what's going on and what could happen. This most certainly brings the issue home," Hebert added.

Wells Johnson

Reserve Lt. Debbie Wilson *leads IS troops to firing range*

Welch, who is married to a systems analyst who works for the government, just turned 40 last month. In his civilian life, he is an independent contractor currently working at Polaroid Corp.'s Marketing Systems Division as a senior IS manager. In the reserves, he is head programmer and systems manager in the mobile unit.

"I was very surprised to hear I was called up, even though I knew it was always a possibility," said Staff Sergeant William Humber, 40, who is a systems designer for operations in the reserves and a business systems analyst as a civilian at Data General Corp.

Humber, who is married and has three children, said, "My family is pretty upset about this because I have a brother who served in Vietnam and lost his legs."

At 57, Sergeant Wendell Beppler is the oldest data processing professional in the 324th DPU. He is assistant supervisor of the unit, in charge of all hardware and software. He has three daughters and a son.

Beppler's son, 26, is also in the reserves and presently on standby for mobilization for Operation Desert Shield, Beppler said.

Chief Warrant Officer James Russell said, "It was a surprise that being called up for active duty would ever happen to me . . . I've been in the reserves for 22 years this October and have never been called up before."

Russell, 44, has been working at John Hancock Mutual Life Insurance Co. in Boston for almost 22 years. He was recently promoted to the position of program applications systems manager for the corporate payroll department there, he said.

While Russell is serving his tour, his work load will be given to two other people in the office, and his position will be held for him for at least 180 days, Russell said.

"John Hancock will be making up the difference between my Army pay and my civilian pay for at least 180 days. They have been very supportive," Russell said.

Wells Johnson

Members of *the 324th Data Processing Unit (from left to right): Staff Sergeant Sharon Kelsey, Clayton Beatty, James Russell and Sean McNiff.*

Financial strain

The difference between active-duty military pay and civilian salaries is a concern for some members of the unit. "I don't think there is a person here that won't suffer financially from this," Welch said

The 324th DPU is a direct reporting unit of the 94th U.S. Army Reserve Command, headquartered at Hanscom Air Force Base in Lexington, Mass. It is one of four mobile data processing units in the reserves (there are 12 like it in the Army worldwide) and consists of three 35-ft trailers housing an IBM 4341 mainframe running IBM's OS/MVS operating system with about a dozen IBM 3270 terminals hooked together on a network with fiber-optic cables, Russell said. It is 100% mobile and powered by multiple 100-kilowatt generators, which also control the climate in the trailers, he said.

"We're designed to go where the troops go and, if necessary, we will," Welch said.

Dillon said that the reason this DPU was called up first was because of the quality of professionals in the unit.

"It's no mistake that these particular people have been called up. The people in this unit also are a part of the high-technology belt of the country," Dillon said, adding that the reserve units that are stationed near Silicon Valley are not data processing units.

GSA grounds proposed FAA advanced system

BY J. A. SAVAGE
CW STAFF

After years of interagency disagreement over how the Federal Aviation Administration (FAA) should acquire its computers, the General Services Administration (GSA) yanked from the FAA the authority to proceed with a $1.5 billion system.

The GSA handed over procurement authority for the project, called the Computer Resources Nucleus Project (CORN) to the FAA in the mid-1980s, according to a GSA spokesman. The GSA took back that responsibility late last month after Congress' oversight agency, the General Accounting Office (GAO), and a congressional committee questioned the project.

The GAO not only questioned the project but also issued a report to Congress in May asking that the CORN contract not be awarded because the system is adequate and future growth rates were unsubstantiated.

CORN was conceived as a 10-year program to spare the FAA's centralized data services an annual request to Congress for more money for upgrades. It was designed to allow the FAA to spend its time on applications rather than on annual justification of hardware procurement.

Nearly all of the FAA's administrative work is done on a single IBM 3084 mainframe and 22 Data General Corp. MV/15000 computers running a total of 23,000 programs. The 3084 is at 86% capacity. While the FAA had planned on postponing an upgrade until the CORN contract was decided, it recently installed an IBM 3090 Model 300E mainframe, according to Leo Epperson, the division's assistant manager. He said he expects the 3090 to carry the FAA until CORN is operational.

DEC dispelling feelings of insecurity

BY MARYFRAN JOHNSON
CW STAFF

Digital Equipment Corp. confirmed last week that it will launch a range of security products and services within the next several weeks to help solve corporate security problems on networked computer systems.

According to internal DEC documents, a security architecture under development will make extensive use of encryption for confidentiality and integrity of communications. It will employ traditional secret-key encryption and public-key techniques for authentication of network users.

The framework for DEC's plan is called Distributed System Security Architecture (DSSA), and its goal to make distributed DEC systems on multivendor networks as secure as stand-alone machines.

DEC has not yet officially announced the program, and the final pieces of it will not be in place until 1992, sources said.

"In the final analysis, we believe DEC has done its homework," said Peter Schay, an analyst at Gartner Group, Inc. in Stamford, Conn.

Art McClinton, a lead scientist at Mitre Corp. in Washington, D.C., said, "Half of this [DSSA] is marketing strategy for what's already there. But there are some new products, and DEC is putting it together well."

Don Holden, a security marketing manager at DEC, told UK-based *PC Business World* last week that DEC will enlist the support of other manufacturers in developing new security products. The security architecture will support the Kerberos authentication mechanism, designed by Project Athena at MIT.

Schay explained that many of the distributed systems security products that are now on the market — such as antivirus "vaccines" and data link encryption — do not address the range of needs in secure distributed systems.

Personal computer security on a network, the analyst cautioned, "will remain limited by the inherent lack of MS-DOS system integrity."

Some users noted that while vendors may talk about distributed system security, there are no products yet approved by the National Computer Security Center in Fort Mead, Md.

At Houghton Mifflin Co. in Cambridge, Mass., the prospect of network security products holds particular appeal for John Young, director of technology.

Houghton Mifflin just finished installing a VAX 6000 Model 410 to manage its Decnet wide-area network, which encompasses the corporate IBM mainframe and Hewlett-Packard Co. minicomputers in regional offices.

"I have talked with DEC about [DSSA products] already, and I'm interested in securing the VAX part of our network," Young said. "We're pretty well secured on our IBM and HP side."

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Hitachi drives counter IBM

BY JEAN S. BOZMAN
CW STAFF

SANTA CLARA, Calif. — Hitachi Data Systems Corp. (HDS) is playing one-on-one basketball with IBM in the disk drive arena and is trying to win out over IBM's 3390. The IBM-compatible HDS 7390 disk drive line announced last week edges out IBM specifications on disk-access times and includes a high-capacity unit with 16% more capacity than the IBM 3390 Model 2, HDS claimed. However, industry analysts noted that the F model is intended for IBM 3380 K emulation, since its extra capacity would not be "recognized" by IBM systems software.

HDS announced that it would start shipping two of its three models — those that match IBM's 3390 Models 1 and 2 — this month. The HDS 7390 F, priced 7% higher than the most comparable IBM list price, is scheduled to ship in the first quarter of 1991.

HDS first described its drives in February, following IBM's Nov. 20, 1989, announcement of two 3390 models [CW, Feb. 12]. However, it was not until last week that the plug-compatible systems maker promised support for IBM's recently announced Escon fiber-optic channel feature.

Designed to be plug-compatible with the IBM 3390, the 7390 has a 10-msec average access time compared with IBM's 12-msec average access time. The basic 7390 drive uses 9-in. platters. A single 7390 cabinet can hold up to 22.7G bytes of data. While IBM also supplies 22.7G bytes per 3390 cabinet, it uses 10.8-in. platters.

Both the HDS and IBM models offer data transfer rates of 4.2M. byte/sec. Both vendors have also reduced delays caused by disk rotation, or latency, from 8.3 msec to 7.1 msec in the latest generation of drives.

One way that HDS plans to differentiate its 7390 F model from IBM's offerings is by preserving the IBM 3380 Model K's "block size," allowing migration from older 3380-type drives without reformatting. By using the HDS 7390 F model in its IBM 3380-K emulation mode, users can lay out their data in exactly the same block patterns as on older drives, HDS executives said.

Users can opt to run the 7390 F in "full-capacity mode" or in IBM 3390-compatible mode, explained Gary Holtwick, vice-president of HDS peripheral systems marketing.

The IBM 3380 has 47K bytes per track, while the IBM 3390 has more than 56K bytes per track, analysts said.

HDS is also marketing a high-capacity model called the 7390 F that provides 7% more capacity than the IBM 3390.

Unrecognizable

If it is not used to emulate an IBM 3380, the 7390's extra capacity means little to IBM mainframe users, because IBM systems software does not recognize the extra storage space in HDS' 9-in. platters. "The software expects it to look like IBM's equipment, so you have to wonder how much of that extra capacity is really going to be useful to people," said Bob Katzive, vice-president at Disk/ Trend, Inc. in Mountain View, Calif.

Industry analysts said the new HDS drives should give IBM a run for its money. "Its average seek time is less than IBM's, and it's got a [20%] smaller footprint than the equivalent IBM models," said Carl Greiner, vice-president of Gartner Group, Inc.'s storage strategies program in Stamford, Conn.

List prices for the 7390 range from $110,000 to $782,000, depending on the number of head-disk assemblies in the drive. The 7490 tape-cartridge system is priced from $117,000 to $554,000. Greiner said he expects HDS to discount its drives as much as 30% lower than the 3390's list price of $759,000.

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COMPWORLD

On-demand switched data needs faced at TCA

BY ELISABETH HORWITT
CW STAFF

SAN DIEGO — Users tired of putting up costly dedicated connections to support occasional bandwidth-hungry applications were the target of various on-demand, switched, high-speed data networking services announced here last week.

MCI Communications Corp., U.S. Sprint Communications Co. and Williams Telecommunications Group each targeted the on-demand market during announcements at the Tele-Communications Association (TCA) '90 conference here with on-demand circuit-switched data services ranging from 56K bit/sec. to 45M bit/sec. Additionally, Sprint announced a frame relay service that could provide throughput "easily an order of magnitude higher" than that of the carrier's current packet-switched offerings.

The introductions came none too soon for users who want to dial up bandwidth in chunks of 56K bit/sec. or more and pay only for the time they need that bandwidth.

"As voice and data departments get together, you see the benefits of both sides, and with voice, the benefit is dial-up connections," said Jim Williams, manager of telecommunications at Mervyn's department stores.

Williams said he envisioned the chain using "the increased flexibility and lower cost" of on-demand data connections for "shipping tapes around and for short-term file transfer with the same reliability you get with dedicated lines." He said he would like to be able to set up a 56K bit/sec. or 128K bit/sec. link "just long enough to send payroll information to the bank, get an acknowledgment they have the file and then hang up."

Ahead of the game

At McDonnell Douglas Corp., switched 64K bit/sec. and 128K bit/sec. links are already in use to support videoconferencing, said Lionel Gillerman, a network specialist at the firm and TCA's vice-president of regulatory affairs. "We'd also like the higher switched speeds for network management; it makes it easier to monitor" remote networking devices, he said.

MCI introduced the first two members of a new family of virtual private data services that promises users the ability to dial up T1 and T3 data lines with a targeted setup time of a half-second, an MCI spokesman said. Williams Telecommunications announced what it described as bandwidth-on-demand service that supports bandwidth of 56K bit/sec. up to 1.5M bit/sec. However, the service may take up to 15 minutes to actually set up a connection, a Williams Telecommunications spokesman said.

The point at which Williams Telecommunications' switched service would stop offering price breaks over its own private-line service would be between 20 and 50 hours of use per month, depending on bandwidth size and length of circuit, a vendor spokesman said.

Such a service is actually comparable to an existing AT&T reserved service that allows users to request a point-to-point connection at speeds of up to 1.5M bit/sec. within 15 minutes of when they want to make the call, according to AT&T product line manager Ralph Andreotta. AT&T recently began providing "true switched" data services with no setup time for 56K bit/sec., 64K bit/sec. and 384K bit/sec. connections, company spokesman Mitch Montagna added.

While AT&T spokesmen would not give an announcement time frame for a switched T1 service, The Yankee Group analyst Berge Ayvazian said that AT&T is due to announce such an offering by early next year.

Sprint unveiled yet another twist on switched data networking, a customer premises device that is reportedly able to enable users to dial up and amalgamate up to eight channels of its existing Switched 56 service.

The advantage of such an offering is that it can be made available quickly to users throughout Sprint's network, a company spokesman said. A possible disadvantage is the delay inherent in bringing up multiple switched 56K bit/sec. links through a user device instead of on the carrier's central office switch, according to Ayvazian. Sprint's Northern Telecom, Inc. switches do not support such switched fractional T1 services right now but will in the future, a spokesman said.

Promises pending

Also at TCA, Sprint said that it would provide "the world's first public Frame Relay Service" next year, initially in the U.S. and UK, with other countries to be added.

The carrier said that it would base its service on an enhanced version of its subsidiary Telenet's TP4900 packet switch and also sell it as a private network switch. Sprint will also provide translation between its frame relay and X.25 packet-switched offerings, allowing users to combine the two types of networks. Frame relay switches are reportedly able to support throughput of up to 2M bit/sec., compared with the 56K bit/sec. speeds that are typical of packet-switched links.

Sprint's switch will interface with the de facto frame relay standard recently announced by Stratacom, Inc., Cisco System, Inc. and Northern Telecom.

Global networking dominates show as suppliers vie for user attention

BY ELISABETH HORWITT
CW STAFF

SAN DIEGO — In a race to supply multinational users' every global networking need, carriers brought new alliances, product introductions and integrated management and billing to the table at last week's Tele-Communications Association '90 conference.

British Telecom led the pack on the integrated services front, announcing that it has amalgamated its U.S. and overseas value-added network offerings under a single umbrella, Global Networking Services. "We see an interest among customers for a single global networking supplier, and we intend to be that leading supplier," said BT Tymnet, Inc. project director Michael Rude.

Through its Global Networking Services strategy, British Telecom will provide customers with a single service and sales organization and a single pricing structure for value-added networking services that extend to more than 100 countries, Rude said. British Telecom has united the sales organizations of its British Telecom and Tymnet companies into a single force that sells packet switching, electronic data interchange and electronic-mail services, customer premises equipment and videoconferencing systems, be added. "Customers have so many choices; they can tell us, 'We want a link between countries A and B,' and we can come up with the best way to provide it."

Transammonia, Inc. in New York is one company that bought into British Telecom's comprehensive approach to global networking support. "One-source global networking is key," said Jay Shroads, Transammonia's director of information systems. "I used to put circuits up between Europe and Singapore" involving various foreign Postal Telephone and Telegraph (PTT) authorities, and resolving network problems involved "a lot of finger pointing and problems with time and language differences," he added.

The fact that British Telecom has its own nodes in many countries eliminated the need for X.75 gateways to PTT services, "which create performance bottlenecks," Shroads said.

AT&T announced agreements to bring its virtual private network service to four additional countries through agreements with five foreign carriers: France Telecom, RTT Belgium, Mercury Communications Ltd. in the UK, Kokusai Denshin Denwa Co. in Japan and Unitel in Canada. AT&T already has virtual private networking agreements with British Telecom and OTC in Australia.

AT&T's virtual private network service is said to provide major discounts over ordinary direct-dial overseas rates. The "next wave of features" for AT&T's virtual private network offerings overseas will include dial-up 56K bit/sec. and 64K bit/sec. data services, which will be implemented as part of AT&T's global Integrated Services Digital Network rollout, AT&T director of international business services Ray Butkus said.

AT&T has no immediate plans to bring its global network offerings under its Unified Network Management Architecture platform, Butkus said.

Also at the conference, MCI Communications Corp. announced that it will interconnect MCI Mail with E-mail services in Scandinavia via the CCITT X.400 standard. MCI had earlier announced plans to acquire international carrier OTI, Inc.

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Landmark aims for DB2 third-party market

BY ROSEMARY HAMILTON
CW STAFF

Landmark Systems Corp. is scheduled to step into the IBM DB2 utilities market this week with a performance monitoring tool that it said will soon be linked with its other monitoring facilities.

Industry observers said Landmark, an established player in the CICS monitoring market, has a good shot at the DB2 third-party arena because it is still a relatively new field with no declared winners.

"This market will eventually be a mirror image of IMS," said Paul Hessinger, a consultant at Computer Task Group in Buffalo, N.Y. "In the early days, there wasn't really a need for IMS tools, but then that market became very strong."

IBM has also just about given the go-ahead to third parties for DB2 performance monitoring. While IBM offers its own tool, it is not a very advanced product and does not seem to be getting a strategic push from IBM, analysts said.

"IBM doesn't make a big deal of [its DB2 monitor]," said Shaku Atre, partner at Atre Computer Assistance, a division of Coopers & Lybrand. "IBM is more interested in providing the engine, and it can create more momentum for DB2 if third parties are selling utilities products."

Landmark will be joining several other performance monitoring companies, including Candle Corp., Boole & Babbage, Inc. and BMC Corp. However, observers expect Landmark to zero in on its existing customer base and play up the integration between monitor tools it will provide next year.

Selling point

One beta-test site fits that profile. Don Parrott, lead software systems engineer at Bi-Lo, Inc. in Mauldin, S.C., said he did not give the other DB2 performance monitors much thought because he is currently a Landmark customer, and the idea of integrating the performance tools was a big selling point.

Parrott, who installed Landmark's DB2 tool four months ago, said the company has been using DB2 since early 1989. Recently, the Landmark tool has come in handy to pinpoint trouble spots in the DB2 development effort.

"We had one application that ran 18 hours," Parrott said. "It was beating the system to death. With [the Landmark tool], we got it down to 30 minutes."

The Monitor for DB2 will begin shipping under controlled availability this week and is slated for general availability in December. A Landmark executive said the company will then begin providing links to its two other products, a CICS monitor and an MVS monitor, early next year.

The company will provide interface screens for each of the three monitors as maintenance upgrades. The update will allow users working with one tool to move directly into another one, said Richard Horseman, a marketing manager.

Templates save on AS/400 coding

BY MARYFRAN JOHNSON
CW STAFF

LARKSPUR, Calif. — Synon, Inc. announced its first series of financial application "templates" for the IBM Application System/400 last week, claiming the products will help users develop customized software applications more quickly and less expensively.

Application templates are essentially building blocks for developing applications at the data model level rather than at the source-code or program levels. "They're a shortcut to getting applications completed," said Christopher Herron, president of Synon, which specializes in computer-aided software engineering (CASE) tools for the AS/400.

Built on Synon/2E CASE tools, the templates provide core application functions that serve as the nucleus for a specific application. At a cost of $5,000 per module, the Synon templates for general ledger, accounts payable and accounts receivable are available immediately.

"What you've got is 80% of a finished product, and you can tweak it as you see fit to tailor it to your needs," said Andrew Mahon, an analyst at New Science Associates in Southport, Conn.

Synon is hoping to sell its template customers on its own consulting services, because only users with in-house expertise in CASE, database design and template design will be able to do the job themselves. "This is not like opening a box from Microsoft and popping it on the PC," said Larry Lipner, president of Synon Consulting, Inc., a subsidiary of Synon.

Synon also introduced its Template Implementation Assistance Service, a one-week, $7,000 program that reviews the steps a customer must take to put the templates to work.

Synon officials said the templates are the first pieces of their new applications architecture, which combines Synon CASE tools with services from its consulting subsidiary. Eventually, Synon plans to offer templates across its entire product line, company officials said.

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HEWLETT PACKARD

Business as usual at ICL after sale

BY KENNETH WONG
IDG NEWS SERVICE

TOKYO — Despite Fujitsu Ltd.'s recent purchase of 80% of ICL, the British corporation will continue to operate as an independent company, according to ICL Chief Executive Officer Peter Bonfield.

"Technically speaking, ICL will be part of Fujitsu, but ICL will operate as it used to, and the management structure will remain stable," Bonfield said at a Hong Kong press conference that was part of an Asian tour designed to blunt speculation about the future direction of ICL. "The company will maintain its identity as a British publicly listed company with external shareholders."

The transaction, which will make Fujitsu the second largest computer company in the world, is expected to be completed by Nov. 30. ICL is now waiting for British government approval.

"We started looking for a partner two years ago as we planned to expand our operations in telecommunications and computers," Bonfield said. Fujitsu and ICL have been working together since 1981.

"So far, we have had no loss of business because of the merger," Bonfield claimed. Most of ICL's customers welcomed the acquisition, eyeing ICL's $1.3 billion cash reserves. "Our competitive edge has gained weight," he said.

The takeover of ICL enables Fujitsu to make inroads into the European market after 1992. According to Bonfield, ICL now has better access to Fujitsu's advanced technology in both computers and telecommunications.

Prodigy adds extra charges for E-mail

BY ELLIS BOOKER
CW STAFF

WHITE PLAINS, N.Y. — Flat-fee pricing for the Prodigy videotex service will not remain quite so flat for entrepreneurial users who have latched onto the venture's electronic mail features.

Responding to excessive E-mail use from a tiny number of its clients, Prodigy Services Co. last month announced that it will end unlimited free E-mail on its videotex service sometime next year.

Since Prodigy announced its intention to end unlimited E-mail on Sept. 6, it has heard from a vocal minority of users. The firm has received about 2,000 negative letters from 700 persons, the spokesman said.

In August, 1% of Prodigy's 480,000 subscriber households sent 3.6 million messages — an average of 750 per user. The remaining customers sent fewer than 30 E-mail notes apiece that month, according to a company spokesman.

"We never in our wildest dreams thought we'd have that kind of E-mail [traffic] from such a small group of users," said the spokesman, who speculated that the traffic may represent businesses using Prodigy as an E-mail hub or for "underground" electronic bulletin boards.

Unlimited E-mail was a founding principle of Prodigy, a partnership of IBM and Sears, Roebuck and Co. that went on-line in October 1988. The service costs $12.95 per month.

The new E-mail pricing, due to go into effect sometime next year, will give all subscribers 30 free messages of any length per month. Beyond that, subscribers will pay 25 cents for E-mail notes of up to four pages in length.

Prodigy investigators discovered that one individual sent 20,000 E-mail notes during August — about 42 messages every waking hour. "We've learned what some people out there told us early on," the Prodigy spokesman said. "It's darn tough to make a business out of unlimited E-mail and a flat rate."

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ADVANCED TECHNOLOGY

Deep Thought boggles the human mind

Research garnered from chess-playing computers may eventually lead to advances in technology

BY DEREK SLATER
CW STAFF

After world chess champion Garri Kasparov handily defeated Deep Thought, a chess-playing computer, in two games last year, he declared that no computer would ever beat the best human players at the royal game.

Some researchers think otherwise. Chess-playing machines have made great strides in recent years, and it may only be a matter of time before a machine wins a world chess championship. Perhaps more valuable than a chess title, however, is the prospect of research using chess-playing computers leading to advances in factory automation, software design and other areas of computer technology.

A team of graduate students at Carnegie Mellon University in Pittsburgh began constructing Deep Thought in 1985. Engineering student Feng Hsiung Hsu built the machine's hardware. With programming by fellow students Thomas Anantharaman and Murray Campbell, Deep Thought was ready to play.

And play it has. Deep Thought weighs in with a national chess federation rating of 2552. That lofty number indicates that the machine's playing strength is on a par with the nation's elite. Master level chess players earn a 2200 rating. The average rating for casual tournament players stands at about 1600.

Tough match

"It's an interesting opponent," said British international master David Levy. Levy has served as a sort of human benchmark for measuring the progress of game-playing computers during the past 15 years. Prior to his 1989 meeting with Deep Thought, Levy won a series of matches against the world's top computers. Deep Thought, however, burned him — four games to none.

"It doesn't play subtle chess," Levy said. "It's a very aggressive. It just comes at you."

Anantharaman, the project's software programmer, sees two practical applications of the team's success with Deep Thought. First, the computer is now refining its own program by using a database containing the move-by-move description of hundreds of grand master-level tournament games. Deep Thought examines the games and adjusts the numerical weights it assigns to each strategic factor according to the results. "Deep Thought is now better at improving its own evaluations than we are," Anantharaman said.

Anantharaman said expert systems can benefit from the same principle. "A robot can perform routine, well-defined tasks that humans are known to be very good at, such as housework," he said. "Let the robot learn from its own mistakes."

Second, Deep Thought illustrates "how much better custom hardware can do than general-purpose hardware" at performing specialized tasks, Anantharaman said. Money and time spent developing software for certain business or scientific applications may be better invested in dedicated machines, he said.

Dr. Hans Berliner, principal research scientist in computer science at Carnegie Mellon, offers a different perspective. Berliner is the creator of Hitech, another dedicated chess computer developed at Carnegie Mellon. Berliner said he sees great significance in the method by which the machines select their moves.

With minor modifications, both computers run "brute force" searches, examining every possible sequence of moves that could arise from the current position. Deep Thought extends this tree of possibilities as far as it can within the given time limit. It then selects the move that most forcefully leads toward an advantageous position.

The strength of the computer lies not in its understanding but in the power of its brute force search. Under tournament time constraints, it can examine all possible positions five full moves in the future — a feat that no human could hope to duplicate.

"Search," Berliner said, "is probably the most misunderstood area of computer science." According to Berliner, a chess computer that could visualize all the way from the starting position to the end of the game would never lose. "It just needs a very limited understanding of completion: what checkmate is, what a stalemate is."

This principle can be applied to other areas of problem solving. "All this stuff humans tell each other, all these methodologies for solving problems are full of holes," Berliner said. "A brute-force search will bring out solutions that you would never see on your own."

The Carnegie Mellon team is already at work on Deep Thought's successor. The next machine will be capable of calculating an astounding one billion positions per second. By 1992, Anantharaman said, he expects to produce a machine capable of winning the world championship.

Ross MacDonald

Intel tries new approach to processing

BY GARY H. ANTHES
CW STAFF

As a part of a contract with the U.S. Department of Defense, Intel Corp. has shipped its first Iwarp prototype — a parallel processing system with ultrafast internal communications — to its research partner, Carnegie Mellon University. The university will use the computer to develop parallel programming tools and test its capabilities in image and signal processing applications.

Iwarp uses an approach to computing called systolic processing, in which data is pumped through an array of processors, undergoing one or more operations at each step. It achieves very high interprocessor communications speeds because it does not have to read and write intermediate results to memory but can operate on data taken directly from communications channels.

The architecture is ideal for signal- and image-processing applications in which huge quantities of data have to be processed in real time.

Iwarp is part of a program of the Defense Advanced Research Projects Agency (DARPA) to develop new architectures for high-performance, large-scale parallel computing for use in weapons systems. DARPA has structured the program to encourage dual-use technologies — those that will find commercial as well as military uses. Ken Harper, an Intel spokesman, said Iwarp has attracted the interest of several large companies that may obtain prototypes through DARPA. However, Intel has not decided whether it will offer Iwarp as a product.

An Iwarp cell is made from a single Iwarp component — consisting of a processor and communications circuits on one chip — and 18 memory chips. It delivers a peak performance of 20 million single-precision floating-point operations per second (FLOPS). Each processor supports four input and four output links, each with a bandwidth of 40M bit/sec., giving an aggregate bandwidth of 160M bit/sec. both in and out.

Harper said an automobile manufacturer is seeking an Iwarp prototype to develop a vision system for collision avoidance. The system, mounted in an automobile or truck, would employ an Iwarp cell to recognize impending danger and would override driver control, he said.

Two other companies are investigating use of Iwarp in vision applications for robotics, Harper said. Other possible commercial applications include fingerprint recognition, analysis of satellite photographs and high-definition television, he said.

Iwarp cells can be combined to produce an eight-board, 32-cell workstation with a theoretical peak speed of 640 MFLOPS, Intel said. A system with 1,024 cells and a peak performance of 20 GFLOPS could be built within existing constraints, according to the company.

The prototype shipped to Carnegie Mellon has 12 cells and supports 500K to 1.5M bytes of memory per cell. Iwarp demonstration systems support standard C and Fortran with extensions for intercell communications. Carnegie Mellon is developing parallel program generators that can convert existing serial codes into programs for parallel execution across multiple Iwarp cells.

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EDITORIAL

Full circle

Everything from world power to weather to washing machines to the economy works the same way: in cycles. The only difference is that some are more predictable and fathomable than others.

A decade ago, nearly all the attention of MIS/DP directors was riveted on technology issues. There were more than a dozen viable minicomputer companies pumping out 32- and 48-bit machines that were localizing the information landscape with their distributed data processing capabilities. Advanced programming languages were giving managers something other than Cobol to think about. Personal computers offered a radically different computing environment of the future for those who cared to think about them.

Ten years later, as the decade of the 1990s unfolds, IS chiefs and CIOs pride themselves on how little time they spend on technology matters. Bruce Rogow at Gartner Group pegs this time allotment at about three percent of the workweek of top IS executives — *three percent.*

Instead, they are focusing on more heady business issues such as melding the IS resource to the long-term goals of the company and, more importantly, using this resource to achieve those goals more effectively and efficiently than the competition.

Strategic thinking. That's what the IS brass spends most of its time doing in the current cycle. As for technology issues, these have become relegated and delegated to those lower on the IS food chain, even to the user departments.

As Rogow and others are increasingly noting, this has to change, and in some companies it is beginning to change. For a wide variety of compelling reasons, the ever-dynamic IS cycle is again moving toward technology and *relatively* away from the pure business issues that have dominated IS thought for the past couple of years.

We certainly observe this change in attitude with our own readership surveys, conducted four times each year for the past 15 years. Those surveys indicate a noticeable shift in preference for more comparative product analyses, information on emerging technologies and other tools to help sort through the welter of solutions available. The former mainstays of using IS for competitive advantage, honing information as a strategic resource and so on, are of relatively declining interest.

The good news is that the pure business acumen and skills acquired in recent years will come in handy for what will promise to be the greatest challenge of this decade: convincing corporate management to invest heavily in the exciting new platforms and architectures that are emerging during times when levels of business activity will likely be ebbing.

All cogent arguments will be grounded in a thorough understanding of precisely what these technologies will bring to bottom-line performance. Key elements of the sales pitch simply can't be left to small fish.

LETTERS TO THE EDITOR

Bias debate

Computerworld's editorial, "Glass houses" [CW, Aug. 20], appears to argue that the trade press is as honest, as objective, as responsible, etc., as the country's leading newspapers. Your argument would be much easier to swallow if you could give us a rough idea of how many "negative" stories *Computerworld* has printed about *its* advertisers and readers.

The Wall Street Journal, to name one example, routinely prints stories detailing misfeasance, malfeasance and nonfeasance in business. In some cases, it has included lengthy, detailed articles describing those activities by its advertisers.

Oddly, the only "negative" stories I recall seeing in *Computerworld* along those lines have reported on things such as companies being fined for improperly disposing of toxic waste — and those have appeared *after* the fines have become a matter of public record.

Owen K. Darrath
Brockton, Mass.

Bias debate II

Regarding your editorial that dealt with the objectivity of the computer industry trade press [CW, Aug. 20], I would characterize the trade papers by the following:

- A single-minded devotion to decentralization of computer hardware, with free publicity for such marketing inventions as "downsizing" and "open systems."
- Relentless promotion of microcomputer systems and products at the expense of all other types of technology.
- Blind acceptance of most vendor marketing claims as fact. Complex issues such as price/performance levels are oversimplified to such absurdities as MIPS ratings.

An outstanding example of the consistent bias of trade papers occurred in your front page article entitled "Fujitsu move rattles Europe" [CW, Aug. 6]. Figures presented with the article, which were corrected in a later issue, showed a very healthy European mainframe market of more than $9 billion per year, with a growth rate of 7% — nearly $1 billion — in 1989. IBM's growth in European mainframe shipments was shown as an outstanding 25% increase.

With these facts, what was the tone in the body of the article? That mainframe vendors in general, and IBM in particular, are in trouble because of downsizing and open systems. Nowhere was any evidence presented to support these points, and in any case, these subjects had nothing to do with the primary focus of the article.

If you want your publication to be truly useful to those of us in the information systems industry, I would suggest that you promote debate on this important topic — the objectivity of the trade press — and review your own editorial practices to remove the obvious bias that influences much of your coverage.

Donald Powell
Partner
Thurgur Powell Associates
Ottawa, Ont., Canada

CA-Idealist

I am writing regarding the Computer Associates International, Inc. CA-Ideal product review [CW, Aug. 27]. The poor ratings in the analysis/design, database setup and file maintenance transaction areas lead readers to view the product as an incomplete fourth-generation language solution at best and a closed architecture for enterprises seeking to implement an integrated computer-aided software engineering (CASE) environment at worst.

Criticisms noting "the absence of an integrated CASE tool," "cumbersome processes at the program code level" and documentation that was "not readable" do not reflect the experiences of our firm — a long-time user of the CA-Ideal/CA-Datacom, CA-Ideal/DB2 solutions.

The majority of CA-Ideal users we speak with are focused in another direction altogether. With the emergence of seemingly competing software architectures, the growing interest is in how to implement multiplatform, non-IBM Systems Application Architecture languages (CA '90s) in an IBM AD/Cycle framework without throwing away the investments already made in mission-critical CA-Ideal-based systems.

Steven P. Subar
Vice-President,
Sales and Marketing
MF] International
Chicago, Ill.

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Artificial ignorance: Not bliss

CHARLES P. LECHT

To set the scene for what is to follow, I want you to know that I think computers are wonderful and that almost every use of them provides us with some form of artificial intelligence endowment. I define AI as an augmentation of man's natural faculties of sense, recall and reason. The computer extends these beyond what is otherwise possible.

Along with the benefits we may expect from AI, I suspect that we may not escape encountering its negative counterpart, "artificial ignorance," or -AI.

-AI offers us the potential to so diminish man's natural faculties that we are deceived into believing the unbelievable, accepting the unacceptable — in general, being dumber than we really are.

For example, focusing on just one of man's senses — vision — people lived thousands of years without electronic computers, yet they reached some powerful visual conclusions. They discovered that the earth is a sphere, that nine planets circumnavigate the sun and that there are galaxies, and they estimated the size of the universe with as much certainty as anyone has been able to do since.

Before the invention of the electronic computer to aid us in mathematics, scientists invented differential and integral calculus and created trigonometry, geometry and statistics.

Sir Isaac Newton didn't have much more than paper and pencil to do the work he did in physics, yet Newtonian physics endures as an indisputable body of knowledge that describes a major part of our universe. Albert Einstein didn't use a modern electronic computer to reach his conclusions either, yet his theories endure as the definitive augmentation of Newton's universe.

In the logic arena, we'd be hard-pressed to find any invention that has surpassed those of the precomputer era. Russell and Whitehead didn't have a computer to help them; neither did Thomas Aquinas, Aristotle or his teacher, Parmenides. Yet their works increase in value as time passes. We need but cite the works of Marie Curie and Louis Pasteur to further our arguments on what the brain was able to produce in the biological world when modern electronic computers weren't around.

Today, we have modern digital computers, but we are hard-pressed to cite anyone or anything of equal stature derived from these, save a few events in space and communications technology. Not to demean the powers that modern computers offer, but we cannot escape the realization that the misuse of this power offers us the ability to create monumental blunders. This brings to mind America's most recent -AI achievement — the Hubble deep space telescope.

Rob Dukes

The cost of an entire space shuttle mission plus the cost of producing the blinded Cyclops was expended just to see what Galileo saw through his home-made telescope. Whoever issued for publication the pictures of the same heavenly bodies before and after Hubble snapped them had to be up to no good — we could not tell the difference between the two.

The Hubble blunder wouldn't have been possible without modern electronic computers. We can only conclude that it resulted from a massive augmentation of -AI by the scientists who planned the project. No human brain unaided by a computer could have erred so stupendously.

The money the Hubble trouble cost Americans may have been enough to cure cancer and acquired immune deficiency syndrome, with enough left over to shelter the country's homeless.

-AI had to be at work when the recent plethora of highly vulnerable, unusable and unneeded weapons were made in countries all over the globe. Don't get me wrong. I'm not against the creation of weapons, if for no other reason than to frighten off all the crazies that seem to abound in our computer age. But give me a break — the sight of the Stealth bomber sneaking above the non-radar of Panama is almost too much to bear.

What about the use of computers in commerce? Surely -AI was at work in the now famous Black Tuesday market crash in October 1987. A battery of systems all running the same program, augmenting the decision-making process of a legion of traders, had to at least have contributed to the cause of the implosion that made market yuppies wonder if their own brains worked anymore.

It seems as though -AI is the cause of most of the big blunders of our times, blunders that cannot be credited to individuals or even groups of individuals. You can't blame all of NASA for the Hubble fiasco, nor can you blame our mass of investors and brokers for Black Tuesday. Only a computer can screw us up on so large a scale.

Is it the fault of the humans operating the computer, regarding the computer-generated results as absolutely correct without using the old gray cells to check whether the results make sense? Of course it is! The computer is merely aiding the human brain in its inherent ignorance.

Lecht is an IDG News Service correspondent based in Tokyo.

Japanese decade gives way to European decade of '90s

JEFF ANGUS

The Japanese decade came to an end last December. Their dominance of business in the 1980s was valuable to microcomputer users. The miniaturization pioneered by Japanese electronics wizards, the constant flow of minor but cumulatively significant improvements in electronics products, their willingness to dump products at below cost — keeping computer prices in a downward spiral — were critical elements in the computer revolution. But the Japanese decade came to an end.

It wasn't because of technological shortcomings. It wasn't because of a failure of the much-vaunted megacorporation or their corporate-labor relations. It ended simply for two reasons.

First, no strategy — no matter how effective — is optimal forever because environments change. Second, through no fault of their own, the Japanese are basically outsiders in the largest economic boom to come along since the post-World War II growth in the U.S.

The '90s will be remembered as the European decade the way the '50s were the U.S.' private playground. Pundits are waxing poetic about the importance of 1992, the year most European nations will join their economies more closely through the Common Market (OECD). That is a side factor, not the key event.

The key factor was the opening up of Eastern Europe. The largest untapped per-capita consumer markets in the world are much bigger opportunities for advanced industrial products than China.

Those gross national product numbers are somewhat fuzzy, based on U.S. government numbers that the CIA recently admitted were off target, but the fact that those Eastern European consumers have considerable assets in savings is indisputable. When you hear about consumer anger in the former Warsaw Pact countries, it's because they have savings but nothing exciting to spend money on.

The unleashing of the Eastern European consumer will generate an unprecedented boom in the only economies in a position to take strong advantage of Eastern European expansion: OECD countries. It won't be the U.S., and Japan will only be a minor player. Neither country has the uncommitted liquidity to build up industrial capacity the way OECD countries do. So this windfall will accrue in OECD-based industries, and with that, their economies will grow like a bodybuilder on steroids — in every direction and without regard for aesthetics.

The European economy will sop up computers and software at the same unbelievable rate that the U.S. market did in 1983-1984. OECD companies are far less saturated with computers than their U.S. rivals, and with our market potentially flattening, the lion's share of growth will come across the Atlantic.

I think the most remarkable piece of that growth will be in portable office technology, since more companies, and therefore more people will be operating transnationally, traveling to do business with new customers across the continent.

It won't be the kind of boom computer analysts understand — a "more of the same in a different place" scenario. Europe is innately different from the U.S. and Japanese computer markets.

Former glory daze

In fact, U.S. computer industry pooh-bahs may not understand what has happened until after their European business has evaporated and their domestic business is a shrunken prune of its former self.

The European business market is in the same weight division as the U.S. and Japan but broken up into smaller groups, each with a separate spoken and written language and wildly varying cultures. Where Americans productively use technology to process words or store order forms and contact data, Europeans can make the most gains using existing technology to communicate across language and cultural boundaries.

Some vendor is going to make a bundle from word processors that translate business blather into 15 other languages, speech recognition and voice output systems that translate and pocket computers that advise on appropriate cultural behavior and track, in real time, current trade regulations in 20 countries.

The European boom is going to fuel a marked increase in artificial intelligence efforts. The last trend requires computers to work invisibly and remotely the way the telephone system currently does. It requires computers to become an extension of the telephone system, something the OECD countries are already way ahead of us in doing through integrated services digital network.

These quantum advances will come through European necessity. We will benefit economically if our industries are prescient enough to act, and we'll benefit from the trickle-down effects of the advances in AI and telephone-computer melding as European vendors peddle their revolutionary products to us.

Since the last great surprise in computing — the proliferation of PCs — seven years ago, the technology that organizations implement has changed in scale and horsepower but not in function. The '90s, the European decade, will provide the next surprise.

The computer of 1997, especially the portable computer, may be virtually unrecognizable to the user of today. Organizations that follow European technology developments most closely will be in the best position to harvest the rewards.

Angus is a manager at Farallon Computing, Inc., a manufacturer of Apple Computer, Inc. Macintosh networking hardware and software in Berkeley, Calif.

COMMENTARY

J.A. Savage

Change vs. user loyalty

Hewlett-Packard is serious about open systems. That is clear. But whether it can parlay that commitment into a successful computer company in the next decade is certainly hazy.

Black clouds formed over analyst reports following the firm's recent financials, showing a net quarterly loss of 5%. Analysts such as Montgomery Securities' John Jones and Salomon Brothers' John Dean question HP's ability to survive the change to open systems.

If HP had started out in the late 1980s with new computers based on RISC architecture and the Unix operating system, the company would be flying like competitor Sun and to a lesser extent, Mips Computer. But HP has a curse that used to be considered a blessing — a large installed base.

Some of those longtime users — the ones with HP's proprietary operating system, MPE or even its 20-year-old real-time systems — just don't want to change. I don't blame them. They have time and capital invested in making those systems work for their own needs.

If it were up to them, HP would keep supporting those systems into eternity. HP likes those users. It does everything it can to keep them from being ticked off. Having heard from a cranky bunch of real-time operating system users at a user group conference in 1989, HP

Continued on page 36

AS/400 joins CIM's roster

IBM beefs up computer-aided manufacturing line, but is it enough?

BY ELLIS BOOKER
CW STAFF

IBM's move to bring its Application System/400 minicomputers and Risc System/6000 workstations and servers into the computer-aided manufacturing (CIM) arena may fill a hole in the company's CIM offerings and better position IBM against rival Digital Equipment Corp. in competition for small and mid-size sites, according to analysts.

Yet some analysts complained that the delivery of the first CIM AS/400 product is nearly a year away and noted that IBM has not clearly set forth how its enterprisewide CIM solutions will include the AS/400 platform.

For example, IBM did not add support last week for its Distributed Automation Edition (DAE) to the AS/400's OS/400 operating system. DAE is a communications facility, currently available for OS/2, that supports access to data from multiple (both IBM and non-IBM) applications. An IBM spokeswoman said the CIM Series/400 will come with communications and routing services "equivalent to those provided by DAE."

"I buy them at their word that all the architectures will be coordinated ... The question is when," said Erik Keller, program director of the CIM service at Stamford, Conn.-based Gartner Group, Inc.

The AS/400 will manage the production and business applications and a shared database, while the RS/6000 will be used for design and engineering applications, and standard and hardened-for-industry versions of the Personal System/2 will sit on the plant floor.

However, Keller observed that connecting the Unix-based RS/6000 with the proprietary AS/400 could get expensive. "IBM will have to glue and patch to make that happen," he said. "It appears [users] will have to buy a Token Ring adaptor, some [Systems Network Architecture] programming protocols and one, if not two, software packages. When you start adding it up, it's not cheap."

"Needless to say, IBM has been badly hurt by DEC's midrange [products]," said Martin Piszczalski, a senior industry analyst at The Yankee Group in Ann Arbor, Mich. Piszczalski, said the new product may be attractive to smaller companies — ones not large enough to implement IBM's mainframe-based CIM products — and others that will want to use the AS/400 as a hub, connecting personal computers and workstations on the plant floor.

IBM introduced three CIM software solutions for the AS/400 and RS/6000 last week: the Base Edition, which includes an interface supporting data sharing with IBM's Manufacturing Accounting and Production Information Control System/Data Base; the CAD Integration Edition, which links IBM's Cadam or Catia design systems on the RS/6000 with an enterprise database on the AS/400; and the Application Edition, an electronic engineering management system that tracks changes in design and specifications through to production.

According to IBM, the CIM/400 products will be available starting in the third quarter of 1991.

IBM to replace faulty fans on some 3390 disk drives

BY ROSEMARY HAMILTON
CW STAFF

IBM is apparently not messing around when it comes to its top-of-the-line disk drives.

The company recently confirmed plans to replace all fan units on its 3390 disk drives shipped between May and August of this year.

The fans have the potential to cause system disruptions but apparently will not cause data loss. Two users who received drives during that time frame reported no fan-related problems. The situation was first reported by Technology Investment Strategies Corp. in Framingham, Mass. earlier this month, and IBM immediately confirmed it. The market research firm said the fan defect affects about 25% of the 3390 installed base of approximately 7,000 to 8,000 units.

IBM's quick and open response to the 3390 glitch may in part show its determination to put its problematic disk-drive history behind it. Its high-end 3380 drives had been plagued with faulty bearings, and the introduction of the 3390 was delayed last year because of a technical glitch.

"We are probably using a sledgehammer on a gnat here, but we can't leave any risk [of problems]," said Bill Reedy, IBM's director of storage systems marketing.

According to Reedy, the initial fan unit shipped with 3390 drives last year produced a slight hum, but it did not appear to harm the drives.

Nonetheless, IBM engineers set out to design a better fan early this year. But what was to have been a remedy ended up causing a larger problem. The new fan design had a defect that caused it to either wobble or get stuck, shutting the drive down.

Reedy said the defect did not show up when IBM tested the new fan unit before approving it for production. In August, IBM was alerted to one fan problem in the field, Reedy said, and the company immediately stopped production of the new fan unit. Within two weeks, another fan design was completed.

All new drives are currently shipping with the latest fan, Reedy said, and the new fan has neither second fan's defect nor the first fan's hum.

Reedy said the flawed fan unit has the potential to get stuck. When that happens, the disk drive's microcode senses a potential problem and shuts off access to the head disk assembly unit. Data currently being accessed is likely to get trapped.

Reedy stressed that the defect would not cause a system crash or loss of data. He said IBM is working with customers to determine when they can accommodate the repair job, which is expected to take 15 minutes.

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Voice recognition gives direct line to the Riviera

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

NICE, France — *Toute La Cote d'Azur En Ligne Directe.*

That advertising slogan made its debut last spring throughout France, promising to put "all the French Riviera on direct line" with a single phone call.

What its designers say is the world's first voice-recognition information system at a tourist agency, "Com'-Azur" is both a high-tech experiment and a chic new marketing tool for the state-run Comite Regional du Tourisme in Nice.

"This is a new niche for us, a way to translate our knowledge into concrete details that our tourists can use," said Dominique Charpentier, director of the regional tourism agency. "Travelers want better information, greater freedom and speed in choosing and booking their holidays."

Based on Digital Equipment Corp. Microvax computers, the Com'Azur system allows callers speaking English or French to verbally browse through a database packed with a range of tourist options from the largest cities along the Cote d'Azur. The system logs 250 calls per day.

From a range of key word choices — sometimes the name of the city or special event — Com'Azur users can pick a hotel in Menton, rent a car in Monaco, book tickets for the opera in Nice, make reservations to dine in Antibes or check the dates for an art exhibit in Cannes.

All with a single phone call.

"The machine is only the pipe, really," Charpentier explained. "It puts the customer through to the destination."

If the caller selects a restaurant in Menton, for example, the system connects directly to the restaurant and waits in the background while the caller makes his own reservation. Then it comes back on-line to proceed with car rentals, hotel reservations and so forth.

The database is loaded with 2,000 pieces of information supplied by regional businesses, all of which can update or change their entries from their own "Minitel" terminals. France Telecomm, the public telephone company, has installed approximately 5 million Minitels free of charge.

The Cote d'Azur attracts 8.5 million tourists to southern France each year, and they pour at least $2 billion into the local economy. Yet that accounts for only 1% of worldwide tourism.

"Our problem is simple," Charpentier noted. "Destination Riviera has some very hard competition worldwide . . . The more accessible the Cote d'Azur is, the more attractive it is."

What callers do not see is the technical side of Com'Azur, which starts with Telic Alcatel 2600 E automatic switching equipment to handle the 30 phone lines, automatically dial the chosen service and indicate whether the line is busy.

Three DEC Microvax 3000s, each with 8M bytes of memory and 159M bytes of hard disk space, run the voice end of the system with Decvoice cards.

Charpentier *directs tourists*

The database, built on DEC's RDB, resides on a DEC Microvax 3400 with 28M bytes of memory and 400M bytes of disk capacity. The entire system is linked by Ethernet using Decnet and DEC-developed software.

The Com'Azur software was jointly developed by DEC and several French companies in the research science park at Sophia Antipolis — France's own Silicon Valley — located about 15 miles inland from Nice and Cannes.

In some ways, however, the system is still struggling to its feet.

The 30 leased lines cannot always handle the volume of calls, so would-be users often encounter busy signals. Other callers are put off by the mere idea of conversing with a machine.

"We need to develop the acceptance of the public," Charpentier acknowledged.

Making a profit from Com'-Azur is also something of a problem for the tourism agency.

French telecommunications regulations have effectively cut the agency out of the revenue picture thus far, with only state-owned France Telecomm reaping the income from those 250 daily calls.

"We are working on that," Charpentier said with a smile. "Our [telecommunications association] is in dialogue with the government now."

IBM vows commonality between AIX and OS/2

BY JOHANNA AMBROSIO
CW STAFF

ARLINGTON, Va. — Deciding whether to adopt Unix or OS/2 may soon become a bit less daunting. In a briefing here last week, IBM managers said they were building "common elements" to tie the two closer together.

The managers also pledged much-improved availability of the RISC System/6000 machines — the wait will be cut in half to 30 days by year's end — and said they have fixed all the major bugs that had plagued early AIX versions.

"You'll see a lot of commonality between OS/2 and AIX," said Jeff Mason, director of advanced workstations and AIX systems. "There will be common database managers, network management systems and compilers," he said. "And there will not only be commonality between AIX and OS/2 but between AIX and our other operating systems, like VM and MVS."

Mason said the choice of operating system will hinge on the user's background, training and preference. "OS/2 is for people who are moving up the Intel architecture line and want more performance. If they've invested in DOS, it makes sense to go to OS/2. But if you're coming from the Unix world, going to OS/2 might be a bit strange."

The distinction between the two "is going to blur in the longer term — people will choose one or the other, and it won't make much difference. People know what they want, and they don't agonize over the operating system decision," Mason said.

Open systems pledge

Furthermore, IBM will "demonstrate its commitment to open systems" by swapping out its current AIX kernel for the one that will be available from the Open Software Foundation, called OSF/1. "We'll do this over time when it makes sense to do it and without sacrificing any of the functionality now in AIX," said Donna Van Fleet, director of AIX systems in Austin, Texas.

IBM will also bring out an OSF/1 version for its Personal System/2 line of computers and "add functionality to allow the PS/2 to participate more as a family member with the RS/6000," Van Fleet said.

Versions of the OSF kernel will also be available for the System/370 and System/390 mainframe families, she said.

IBM managers confirmed reports that its strategies for computer-aided software engineering (CASE) in AIX and the mainframe worlds will be coming closer together. "Over time we will talk about an IBM CASE strategy, not just an AIX or AD/Cycle strategy," said Jerry Latta, applications solutions director for technical computing. Other directions for AIX include the following:

- Improved performance of the hardware and compilers with a goal of doubling performance every 12 to 18 months.
- An announcement to be made shortly about when the Nextstep interface will run on the RS/6000.
- Help screens on AIX to make it more user-friendly.
- Improved security, now at the C2 level, to go to the B1 level.
- Support for multiprocessing.
- Low-cost stand-alone RS/6000 machines.
- IBM will exceed its promise of 1,500 applications for the RS/6000 by year's end.

The managers said problems with early versions of AIX, including system crashes, have been fixed with the so-called golden version of AIX, Version 3.0, which shipped in June.

Van Fleet said problems arose with releases prior to this latest one. IBM "wanted to get the code out so our business partners would get a head start. But some didn't completely understand that this was early code, and they had different expectations," she said.

The RS/6000 is doing very well in sales, Mason said. "We're ahead of expectations and will ship more in the fourth quarter than originally planned."

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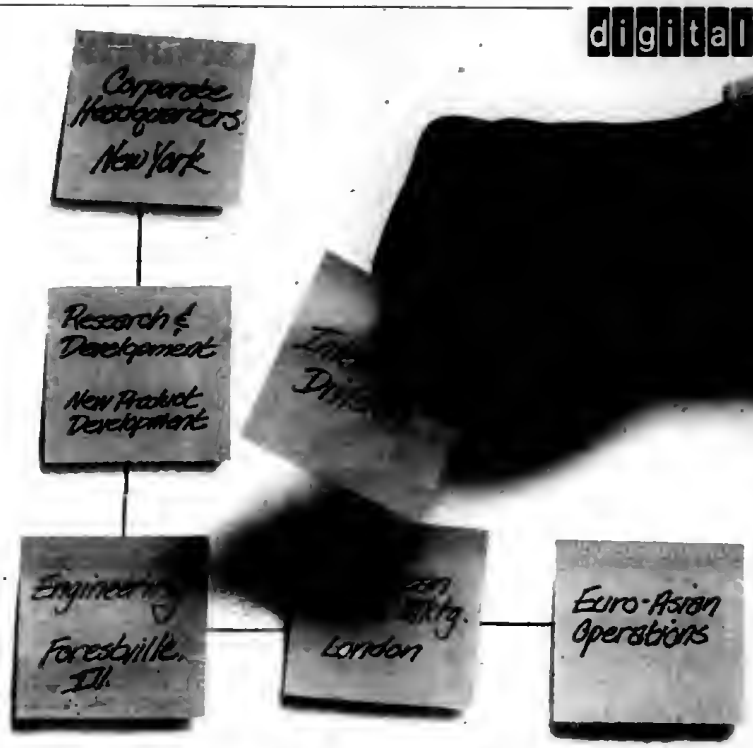

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AT&T Unix to gain enhanced security

BY JOHANNA AMBROSIO
CW STAFF

NEW YORK — AT&T's Unix System Laboratories said recently it will add security features and increased multiprocessor support to its version of Unix.

Additionally, AT&T Unix System V Release 4 will now include new file management and systems administration facilities.

Larry Dooling, president of Unix Software Laboratories, said the enhancements are consistent with Roadmap, a document issued by Unix International in January. About 12 firms are working with Unix Software Laboratories — an AT&T subsidiary that implements Unix changes recommended by the nonprofit Unix International — to deliver the System V enhancements.

"The product is on time, on track and meets the specifications without being partial to any one hardware architecture," said Peter Cunningham, president of Unix International.

The only area in which Unix Software Laboratories "could do better" is in supporting more of the industry-standard user interfaces, including OSF/Motif from the Open Software Foundation, Cunningham said. "It's quite apparent there will be three or four standard interfaces."

In the meantime, Unix security will be beefed up to adhere to the U.S. National Computer Security Center's B2 level. The first phase, the B3 level, will be delivered in the first half of 1991. In the second half of 1991, Unix Software Laboratories will make a rating kit available so users can test their applications to ensure they also conform to the B3 level.

Greater multiprocessor support will also be delivered in stages. By June 1991, a "standard" version supporting up to 16 processors will be released. It will be available for computers from Unisys Corp. and Motorola, Inc. and on Intel Corp. microprocessor-based machines.

By mid-1992, an extended version will support up to 30 processors — compared with fewer than 10 now — and user-defined interfaces and work in a B2 secure environment. Applications developed for the earlier multiprocessing version will run on the new one.

HP, Oracle sign deal

BY JEAN S. BOZMAN
CW STAFF

REDWOOD CITY, Calif. — Hewlett-Packard Co. agreed recently to enter into a strategic partnership with Oracle Systems Corp. just one week after announcing that it would buy 10% of Ask Computer Systems, Inc. Ask, in turn, offered to purchase Oracle competitor Ingres Corp.

HP managers said they see no conflict in supporting both the Ingres and Oracle database management systems because customers often specify which DBMS product they want to use.

"In our business situation, 40% of our users have chosen their DBMS and want to pick the hardware to run it on," said Laura Cory, marketing manager for HP's computer systems group. "We recognize that Oracle is one of the leading providers of software on Unix systems. It's clear to us that we need to be offering choices of all the leading [DBMS] products."

The move, which was announced to both companies' sales personnel during a national teleconference over HP's internal television network, will strengthen existing ties between HP and Oracle. Both sales forces are now authorized to sell each other's products.

"We really want to get down to the business of providing [applications] solutions," said Brian Owen, vice-president of Oracle's minicomputer systems group.

N.J. computer break-in raises doubts

BY JOHANNA AMBROSIO
CW STAFF

TRENTON, N.J. — The New Jersey State Legislature's information systems department is still scrambling to recover after a computer tampering incident raised some doubts about the system's security.

Seven months after some Democrats' computer files had allegedly been breached by one or more members of the Republican staff, the group that oversees the legislature's IS is trying to reassure people that the computers really are safe to use.

"We feel our system is secure," said Albert Perroni, executive director of the Office of Legislative Services, which manages the computer systems used in the New Jersey Assembly and Senate. Investigations into the incidents are being conducted by the Attorney General's office and by a joint ethics committee.

Another staff member, however, shed a bit more light on what happened. "The software we were using had a trapdoor. By the time we found out about it, it was too late," said the staff member, who requested anonymity.

No definitive information is available about the extent of the file prying. The number of files and people involved have been kept under wraps.

In the midst of the controversy are the legislature's two Wang Laboratories, Inc. VS computer systems. There were three at the time of the break-ins, but the legislature has since upgraded to two more powerful models.

The systems, which connect 120 field offices to the Trenton state house, are used for research, to track legislation and to provide public access to information.

The application involved with the break-in was a database system that some Democrats were said to be using for political work. Because a New Jersey law bars the use of state equipment for political work, some of the Democrats involved may also be facing legal action.

The scandal erupted in February, when Democrats began complaining that some of their files had been tampered with. Jeffrey Land, a GOP staff member who has been accused of illegally accessing those documents, was fired in March.

Data management staff members tracked the activity to Land, initially on a tip, Perroni said. "We ran a logger on [Land] and found he was able to access all the files in question." A logger tracks all the activity from any given terminal — which files were accessed and for how long.

Two events have combined to add new fuel to this case: Land is said to have come back to the jurisdiction and is ready to testify in return for the state's promise not to charge him with a crime.

Second, one of the state's top Republicans resigned on Sept. 7 after admitting that he lied to investigators about the incident.

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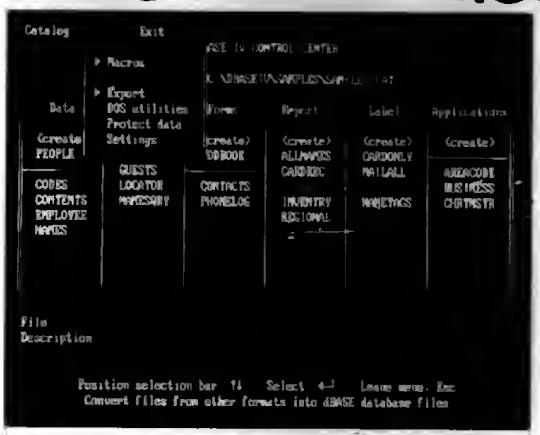

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REPORTER'S NOTEBOOK

Overcoming barriers

The User Alliance for Open Systems, formerly known as the Houston 30, began to get its act together at a two-day meeting in Warren, Mich., last month. What follows are some insights into the hopes and fears of the coalition of 45 information systems managers, which is promoting standards-based computing systems.

■

Leaders of the User Alliance said it is far too early to discuss what international standards the group will endorse, although it is clearly sympathetic to the IEEE Posix and the International Standards Organization's Open Systems Interconnect standards. They stressed that there are numerous management and "process" issues to tackle before getting technical.

Responding to persistent questions about whether the user group will back either Unix International or its rival the Open Software Foundation, spokesmen said that is the wrong question. "We want to get the process fixed so we don't have to make that decision," said Hughes Aircraft Co.'s E. W. "Bud" Huber, who was elected chairman of the User Alliance.

■

The IS managers were pleased with themselves for coming up with a mission statement that is crammed into a single sentence. The alliance's mission is "to overcome common barriers to achieving integratable business information environments."

The group also had to agree on a common definition for the term "open systems." The result is that open systems refers to "standards-based, vendor-neutral information technology products." Vendor neutrality provides interoperability and application portability among the hardware and operating systems of competing vendors, the User Alliance concluded.

■

In a draft report, the IS managers said they have a dream of systems integration that looks like this:

- Hardware and software products interoperate across enterprises and across vendors' systems.
- Applications and data are transportable.
- The environment is modular and scalable.
- Interfaces among parts of the business IS are well defined in vendor-neutral standards.
- The technology clearly supports business objectives.

"We need to integrate these islands [of technology] because the whole is greater than the sum of the parts," said Jere L. Thomas, a Humble, Texas-based consultant who was instrumental in the formation of the User Alliance.

■

The coalition, which began with a bias against creating yet another open systems consortium, found that picking one of the existing organizations to join was its most wrenching decision, according to Rick Barron of McDonnell Douglas Corp. The leading contenders were the Corporation for Open Systems (COS), X/Open Ltd., Computer-Aided Manufacturing International and the National Institute of Standards and Technology.

Each contender had its advocates, but none had a perfect fit with the User Alliance's mission. For example, COS is primarily focused on networking, and UK-based X/Open was perceived as being foreign and vendor-dominated.

In the end, the User Alliance voted to join COS after the McLean, Va.-based consortium agreed to stretch its boundaries to include user groups promoting open computing systems. Final negotiations are under way to address user fears that the User Alliance might be swallowed by the vendor-dominated COS and lose its identity. In addition, the group is trying to find a way for smaller companies that cannot afford the COS dues of $25,000 to join the User Alliance, Barron said.

■

A major goal of the User Alliance is somehow to bring down the cost of investments in open systems.

Standards-based products tend to be more expensive than proprietary systems, not to mention the difficulty of replacing the older "legacy systems," users complained.

Product costs will not come down until there is a critical mass of open systems products and users, added Michael A. Kaminski, manager of General Motors Corp.'s Manufacturing Automation Protocol program.

Furthermore, corporate executives will have to focus on the long-term, or life-cycle costs of their information systems, rather than on high up-front costs of open systems, said Don Simanton of the National Aeronautics and Space Administration's Johnson Space Center in Houston.

MITCH BETTS

RISC processor to boost AMD chip line

BY MAURA J. HARRINGTON
CW STAFF

SUNNYVALE, Calif. — Advanced Micro Devices, Inc. (AMD) last week announced a new reduced instruction set computing (RISC)-based embedded processor that analysts said should bring added power to the company's 29000 chip line and allow AMD to keep its standing in the competitive embedded chip market.

The new 40-MHz AMD 29050 chip, which is an upgrade to the company's 29000 line of RISC-based embedded processors, is expected to include a built-in floating-point coprocessor, according to a company spokesman.

Products that might use the AMD 29050 include graphics-oriented products such as scanners, graphical "smart" terminals, color laser photocopiers, laser printers and Adobe Systems, Inc. Postscript-compatible printers as well as network node controllers, the spokesman said.

Target market

"The significance is that the 29K family of processors is targeted for the embedded control market, which is sensitive to cost and space. Most embedded processor manufacturers prefer one-chip solutions," said semiconductor analyst Jack Karp, vice-president of Meta Group, Inc. in Westport, Conn.

The new one-chip combination processor and floating-point coprocessor could, indirectly, bring down end-user costs because the manufacturer's costs would be less, said semiconductor analyst Dean McCarron, vice-president of technology at Instat, Inc., based in Scottsdale, Ariz.

However, end-user costs would probably only be driven down by competition because, "When you're dealing with an embedded controller situation, [the processors] are going into large products that are volume sensitive . . . A lot of times, for these companies to make a profit, they'll use semiconductors to bring down their costs, and they may not want to pass that on to the end user," McCarron said.

Savage

FROM PAGE 27

recently announced a new version of its real-time system. Users wouldn't have to throw out all their old software.

In an effort to keep everyone happy, HP is not only refusing to get rid of any of its old architectures, but it is attempting to give those old systems a bridge to Unix. This is not easy, and it takes up a significant amount of research and development. For example, in order to change Unix to allow it to work with HP's real-time system, RTE, much work needs to be done on the open operating system in terms of interrupts (making sure that first priority gets to the top under the Unix approach to nonjudgmental multitasking) to allow Unix to function more closely to real time.

HP also has no plans to get rid of its proprietary operating system, MPE. Instead, HP engineers are figuring out a way to get Unix to run simultaneously with MPE on one platform. There will be a bit of a performance degradation on Unix applications — HP is shooting for 10% or less — but it will keep users happy with their old proprietary systems while allowing them to dabble in Unix.

A more soft-spoken bunch of users want to see HP prosper in the '90s, and they understand that the way to keep HP and perhaps their own companies afloat is to support open systems. HP doesn't get much of a chance to hear those voices, because the louder user contingent is resistant to change. The company is torn between what it knows it has to do to compete and what it thinks it has to do to keep its installed base happy.

With its dual open system/proprietary system products, it may have found a way to keep everyone happy. The question remains, can any business afford to be all things to all users?

Savage is a Computerworld West Coast senior correspondent.

NEW PRODUCTS — SOFTWARE

Applications packages

Friedman and Associates, Inc. has added an Import Tracking System to its HFA Manufacturing, Distribution and Financial software system, which was designed for IBM's Application System/400 machines.

The system provides import tracking, costing and accounting functions needed by firms that conduct business with overseas suppliers. It can reportedly track overseas shipment data such as credit letters, estimated and actual arrival dates and freight costs.

The Import Tracking System is priced between $3,000 and $6,000, depending on CPU size.

Friedman and Associates
108 Wilmot Road
Deerfield, Ill. 60015
(312) 948-7180

Philip Lieberman & Associates, Inc. has announced a menu-driven software package designed for managing employee time sheet data.

Version 3.0 of Staff Time Accounting enables users to produce four types of tracking reports that list incurred time by project, client and employee. Cost and billing amounts are included.

The software package, which runs on Digital Equipment Corp. VAX machines, is priced at $1,900.

Lieberman & Associates
1010 S. Weinbach Ave.
Evansville, Ind. 47714
(812) 479-5064

Powersoft Corp. has added two software modules to its Growthpower Manufacturing System, a materials requirements planning II information system designed for manufacturers.

Warrantyplus automates the fulfillment of complex product warranty claims, and Creditpower enables Growthpower users to expedite the collection of receivables.

Growthpower runs on Hewlett-Packard Co. 3000 series minicomputers and costs between $44,000 and $200,000. Warrantyplus is priced between $9,800 and $17,150. Creditpower ranges from $7,000 to $12,250. Prices are based on the number of users.

Powersoft
70 Blanchard Road
Burlington, Mass. 01803
(617) 229-2200

System software

Systems Center, Inc. has announced an automated systems administration package designed for IBM Application System/400s.

The AS/Center includes five menu levels: executive review, strategy directives, operations management, console supervision and operator tasks.

Several other features include a backup strategy, a structured recovery procedure, report and print management functions and a systematic method of reclaiming wasted disk space.

The product is scheduled to be released this month for a list price of $4,000 to $15,000 per processor.

Systems Center
1800 Alexander Bell Drive
Reston, Va. 22091
(703) 264-8000

COMMENTARY

Patricia Keefe

Doing the OS/2-step

Put on your dancing shoes.

Besides making public what everyone already knew, the IBM-Microsoft announcement two weeks ago proved that the dynamic duo sure knows how to waltz — around key questions.

Sure, they told us they were splitting up responsibility for OS/2 — a move, incidentally, that anyone with even half a brain could see coming a mile away. The fact that the division of labor put the development of the 32-bit OS/2 Version 2.0 in the hands of the developer most anxious to see it released is not exactly a sign of unity.

What it is, however, is assurance that the product will be completed and shipped. And both users and developers needed that.

While fine as far as it goes, this is not startling news. What many people really wanted to know were some details — particularly about the lesser parts of the announcement — concerning things both said and left unsaid. But IBM and Microsoft were not very forthcoming. One concerned OS/2 developer quipped last week that perhaps she should begin looking for something else to occupy her

Continued on page 41

Bringing up 'baby' computers no small feat

ANALYSIS

BY MICHAEL FITZGERALD
CW STAFF

You could call them baby computers, as in "slip that baby into your pocket, and let's go." But the palm-top and handheld computers that are out there bill themselves as fully featured and fully capable of doing solid work. Still, users seem to be holding these babies at arm's length, as though they are in need of having their diapers changed.

A case in point is the Poqet computer, which its makers claim is the only fully DOS-compatible member of the handheld family. September marked Poqet Computer Corp.'s first anniversary as a company with a product. The Poqet only started shipping in volume in August and met precious little user demand.

Handful of Poqets

La Jolla, Calif.-based Computer Intelligence, which surveys large corporations, showed only a handful of Poqet purchases among 7,400 sites last year and does not expect to see an upswell in the near future.

"I think there's a place for it," said Dan Ness, an analyst at Computer Intelligence. "But I still think that you're going to find a lot more people who want a more self-contained personal computer."

Poqet said it believes it is just a matter of getting the word out to corporations. The firm recently sponsored executive briefings throughout the U.S. About 100 attendees filled the room at one held in Chicago. While many remained skeptical, several people saw possibilities for their companies.

One, an executive vice-president at a major builder in downstate Illinois, wants his 250-strong force of field engineers to carry computers and complains that "they won't even touch a notebook because it's too big."

He thinks Poqet might provide the answer to his problem.

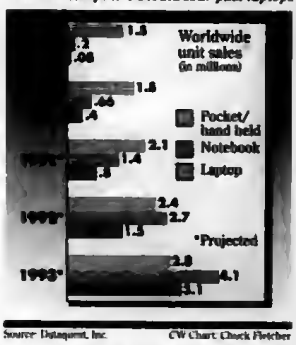
Poqet also looks to be the answer for a company in California. Robert Seat, president of Seatree Nursery, Inc. in Irvine, Calif., said recently he will buy eight to 10 Poqets as soon as the company comes out with the 1M-byte random-access memory cards that Poqet has indicated will be available in November.

Seat's company is currently using two Poqets to do inventory management. Seatree has 130,000 to 140,000 trees, from

Continued on page 40

Tiny giants

While sales of all types of battery-powered portable PCs will show growth, pocket and notebook computers should soar past laptops



Source: Dataquest, Inc. CW Chart: Chuck Fletcher

Stardent takes aim at low, high ends

BY RICHARD PASTORE
CW STAFF

NEWTON, Mass. — Stardent Computer, Inc. moved to establish itself as a full-range graphics supercomputer vendor late last month with the introduction of a significantly less expensive line as well as a new high-end system.

The Stardent 500, which retails from $30,000 to $40,000, is intended for users of low-end imaging, scientific and engineering applications who could not afford to buy Stardent's previous $80,000 entry-level systems.

"It's the first system in its price class that's got a dedicated [mathematical] vector processor built into it," said Richard Fichera, a graphics workstation and technical computing consultant based in Groton, Mass.

The low-end introduction positions Stardent as a "full-range workstation vendor instead of just a niche player at the top end," Fichera continued. Stardent needs such an entry to compete with the low-cost Personal Iris from Silicon Graphics, Inc. and the low-end RISC System/6000 workstation from IBM, among others, be noted.

The system runs Stardent's version of AT&T's Unix System V Release 3.0 and supports the company's Application Visualization System.

The 500 is powered by up to two 32-MHz reduced instruction set computing (RISC) scalar processors and two RISC vector processors. It delivers a peak performance of 64 million instructions per second (MIPS) and 96 million floating point operations per second (MFLOPS).

In image processing, the 500 can manage a minimum pixel transfer rate of 5 million pixels per second. The unit reportedly supports all application packages currently available for Stardent's 3000 series.

Stardent also unveiled its top-of-the-line Stardent 3000VS, which differs from the 500 by offering up to four RISC scalar processors and sustainable processing rates of 100 MIPS and 100 MFLOPS. The system is intended for the most complex scientific, technical and graphics applications.

Like the 500, the 3000VS models are slated to ship by the end of the year. Prices will range from $109,000 to $185,000.

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Offer ends December 31, 1990.

License renewal goes self-serve

ON SITE

BY JAMES DALY
CW STAFF

SACRAMENTO, Calif. — For most of California's 20 million licensed drivers, a trip to the Department of Motor Vehicles (DMV) ranks right above a root canal on the personal enjoyment scale.

But that may not hold true very much longer. Beginning this month, DMV officials will help anesthetize the pains often associated with a trip to their overcrowded offices with an interactive terminal that streamlines the test-taking and fee-collecting segments of the license renewal process.

Drivers needing to renew their licenses in person can use an NCR Corp. terminal housed in a special kiosk that looks and acts like an automatic teller machine, said Gary Nishite, chief of the DMV's office of technology.

After keying in their driver's license number, applicants work with a touch-screen display that pulls up test questions stored on a laser disc within the terminal. Short videos illustrating typical traffic situations are also run, and questions pop up relating to the clip.

The terminal scores the tests, allows users to change addresses or other personal information and then collects the renewal fee using either a Visa or Mastercard — tasks previously handled by a DMV representative.

The scored answer sheet is taken to a clerk, who completes the process by administering an eye test, snapping a photo and issuing a license.

The NCR terminal is currently in pilot locations in Los Angeles, San Francisco and Sacramento, but it is expected to be widely distributed by next year to handle the 6.5 million licenses the state issues annually.

While the interactive terminal promises to speed what can often be a laborious renewal process, spokesman Bill Gengler said it is still only a half-step toward the DMV's goal: the full issuance of a license. "We still need the clerk in the process because there are important security concerns that need to be worked out," he said. "For instance, how do we know if the person taking the test is actually the one applying for the license?"

A possible solution, Gengler said, is to add a fingerprint scanner to the machine, which would then match the print with a central database containing the fingerprints of all licensees. The DMV moved in that direction recently when it inked a contract with North White Plains, N.Y.-based Fingermatrix, Inc., which will supply scanners to the DMV.

Gengler said the NCR terminal will probably never be used for first-time license applicants because important issues such as verification of age will always require human interaction.

Still, the machine's implications are broad. Nishite said the licenses could ultimately be enhanced to become standard credit cards for government business transactions such as welfare benefits processing and hunting and fishing licenses.

California DMV's *Lisa Ito tries out self-service license renewal system*

Critics find Systempro benchmarks unconvincing

BY MICHAEL FITZGERALD
CW STAFF

While Compaq Computer Corp. exulted over a recent benchmark test showing that certain configurations of its Systempro are capable of transaction performance equaling minicomputers such as Digital Equipment Corp.'s VAX 4000-class machines, those results are being met with skepticism in some quarters.

Compaq released results of a TP1 benchmark conducted by Codd and Date, Inc. in San Jose, Calif., which showed that a Systempro 486/33 with dual Intel Corp. I486 microprocessors could achieve 42 transactions/sec. when running Oracle Systems Corp.'s Oracle Server under The Santa Cruz Operation's SCO Unix with SCO MPX.

"[TP1 is] worthless — no one should ever suggest that TP1 results [have] value greater than the paper on which they are written," charged Omri Serlin, head of Itom International in Los Altos, Calif., and founder of the Transaction Processing Performance Council (TPPC). "Every vendor fixes the test results to show [results] their own way, and I would strongly recommend users to disregard them."

Serlin expressed disappointment that Oracle, one of the earliest members of the TPPC, would be using TP1 benchmarks, rather than TPC Benchmarks A and B.

Codd and Date's Tom Sawyer said that Oracle has become much more strict about its TP1 benchmarks since a controversial test released in July 1988, in which Oracle ran a test that was essentially a batch file, giving it greater performance than it would otherwise have achieved. As for the hardware, Sawyer said, the machine's performance was not in question.

The Systempro with dual I486 chips only recently became available. It is expected to retail for $95,432.

Scanner moves OCR closer to desktop

BY JIM NASH
CW STAFF

Will optical character recognition (OCR) reach the desktop? A new product, the result of a collaboration between Calera Recognitions Systems, Inc. and Microsoft Corp., could come close to putting it there.

Calera, in Santa Clara, Calif., recently introduced Scan In, an OCR macro program that teams its Wordscan OCR firmware with Microsoft's Word for Windows software. While the hardware used to scan documents remains bulky, Calera claimed to have developed software making the operation of the equipment almost a DOS utility.

Using the Scan In macro, users working on a Word for Windows file can reportedly call up a scanning command from the menu, feed in a document and incorporate that document into the original file. Previously, users either had to get out of word processing and into the Wordscan program to scan a document, or they had to use multiple sessions on Microsoft's Windows Version 3.0. The macro will be standard in all Wordscan and Wordscan Plus systems this fall. It will be free to owners of current versions of Wordscan Plus.

At the State of Delaware's public advocate office, Evan Wilner has had to work with the latter solution. As the public's representative in hearings to set rates and rules for Delaware's public utilities, Wilner said he deals with "thousands of pages of verbatim transcripts."

The testimony must be scanned, stored, indexed and retrieved — often on tight deadlines for cases involving billion-dollar corporations. He said his three-person office is likely to pick up Scan In after its scheduled October delivery. Wilner said he expects to see a 5-to-1 time savings using the macro program.

A quick utility

Jude Gartland, senior vice-president at Lehman Bros. in New York, said his firm primarily uses a Wang Laboratories, Inc. mainframe in its word processing center to handle data from printed resources. That could change, Gartland said, if the task of combining paper documents with existing files were made easier.

"It sounds as if you can now use [scanning] like a quick utility. That would be much more natural," he explained. Gartland said more word processing might be done at the desks of Lehman executives rather than in the company's word processing center if scanning were streamlined.

Walt Kasha, director of marketing at computer consulting firm Gilbert & Associates, said the macro program delivers on Microsoft's promises that Windows would give users task-oriented capabilities outside of its own line of products.

"We're finally exploiting Windows," Kasha said. Users, he explained, want to know what needs to be done, not what commands have to be used to complete their work.

Gartland agreed, saying the true advantage of the product was not so much in performing multiple tasks but in lessening the information users must know just to get their jobs done.

Baby

FROM PAGE 37

four to 40 feet tall, on 300 acres of land.

"If you have a whole number of people lugging a laptop into the field and trying to use it in the field, well, laptops are fine if you have a lap, but if you don't, what do you do?" Seat asked. Still, typical corporate reactions are similar to those expressed by an executive at a government agency that is looking to replace about 1,500 laptops: "It was cute, but it really doesn't have any use in our business. I might consider one for personal use, but we tend to stay in one place for one to two weeks, so I couldn't see us wanting to purchase anything like that at this point in time."

Companies are most likely to use or want Poqets in cases such as that of Seatree Nursery, where weight and space are major concerns, analysts agreed. One handicap for Poqet may be the lack of full-sized ports and a full-sized keyboard. Poqet's keys are the same size as a regular keyboard but are closer together at the base, and even the company admits that typing speed is not likely to get much higher than 30 to 40 words per minute.

Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass., thinks Poqet has a solid target in highly mobile people, but he said the difference between Poqet and even a conventional laptop has slowed acceptance by the corporate user.

Not the norm

"The challenge [Poqet] faces is that it's innovative, and it's sort of a departure from what people are used to in a notebook machine," Stephen said.

The RAM cards also present a challenge, as an entirely different and far more expensive form of media than conventional floppy disks.

Despite the new media, there are a growing number of software packages available for Poqet, including Wordperfect Corp.'s Wordperfect 5.1, Xyvision Corp.'s Xywrite III Plus, Lotus Development Corp.'s 1-2-3 Release 2.2, and Smartware by Informix Corp. External storage drives are available directly from Poqet, and Micronet Technologies, Inc. just released the Micro Docket, a docking station that gives Poqet users up to a 100M-byte hard drive plus a built-in modem. The docking station weighs about 4.2 pounds.

One East Coast insurance company that requested not to be identified said the Poqet and the Micronet docking station have meant productivity gains for its field force since it replaced Compaq Computer Corp. LTE laptops.

"[The Poqet is] light, it's compact, it doesn't detract from other things you might want to carry in your briefcase," commented an MIS manager at the company. "We get the same performance level [as from the Compaqs], and I think you get about the same speed, even though they say it has less speed."

His biggest complaint about the Poqet is its price, but he says that even at the suggested retail of $1,995, the company receives payback within 18 months.

Papa Gino's 'to go' here to stay

Pizza chain tries home delivery again, this time with a PC-based system

ON SITE

BY RICHARD PASTORE
CW STAFF

DEDHAM, Mass. — It's Friday night. It's pouring out, but your mouth is watering for a pepperoni pizza. You're in luck — the local pizza house you've never tried has started delivering. You pick up the telephone and Papa Gino's personal computer-based delivery system wins over another new customer.

New England pizza chain Papa Gino's of America, Inc. is offering efficient delivery service in hopes of attracting new business — at least enough to pay for a 200-store rollout with hardware costs of roughly $11,000 per site.

This is not the first time Papa Gino's has tried to deliver. In 1982, the company attempted a manual order-taking system that proved too crusty. Phone operators had to manually look up prices, add up the order, figure the tax and sometimes search a map to see if the street was in the delivery zone. Mistakes were as plentiful as pizza toppings.

"It was a really time-consuming process," recalled Tony Lewis, manager of systems analysis.

Delivery trend

The restaurant dropped delivery in 1983 and has since watched Domino's Pizza build a national reputation and gold mine with its delivery system. The trend, even among traditional sit-down and gourmet restaurants, is for more delivery. A significant minority of customers who would otherwise never frequent an establishment will patronize it if it delivers, industry observers said.

"We're noticing a lot of new customers now that we have delivery. That's new business," Lewis said. Preliminary figures from test restaurants showed an increase in business of as much as 30%.

Because it speeds up the order-taking process, a PC-powered system can handle three times as many customers as a manual one. "We hope to get at least 25% increased throughput with the PC system vs. a manual system," Lewis said.

The installation, piloted for a year and now set up in 36 stores, consists of three or four AST Research, Inc. PCs per store connected to incoming phone lines. Diskless Intel Corp. 80286-based models are tied to an 80386-based server by Novell, Inc.'s Entry Level System 1 local-area network software. The PCs send output to printers located in the kitchen and the manager's office.

Papa Gino's *is tempting customers with more than pepperoni and onions*

When a customer calls in, an employee answers and asks for the customer's phone number. If it is a repeat customer, the home-grown database software will match the number with the customer database and pull up the customer's file.

"Everything you need to know about the person, including whether their dog bites, appears on the screen," said Frank Paolino, president of The Mayflower Consulting Group, the Burlington, Mass.-based company that designed the system.

After the order taker types in the order (and the caller's name and address if he is a first-time customer), the system prints out the order for the cook and separate receipts for the delivery driver and customer.

The software also plots the destination on an on-screen city locator grid. Known as Radar because of its resemblance to airline flight-control screens, the grid helps dispatch drivers with efficiency.

With the PCs, Papa Gino's can now log in orders in under 20 seconds as opposed to two minutes. With door-to-door delivery expected in under 30 minutes, the company said, every second counts.

The system also automatically generates reports that save managers over an hour of nightly paperwork. Instead of adding up drivers' pizza deliveries in order to calculate their pay, the manager can get an instant tally from the PC. A running sales tally also eliminates the need to recalculate sales transactions each night for the daily total.

During the pilot year, the company has added some features and dropped others. Out went a bar-code reader that assigned orders to specific drivers. The wand's limited reach and the unwieldy stacks of bar-coded pizza boxes combined to make the process untenable.

In its place, the designer is adding an automatic street locator function that prints the customer's road and its connecting street. There will also be new reports, including one that tracks discount coupons.

The chain, which operates on low margins, will slowly roll out the system to the rest of its locations.

Reading with electronic eyes

Specialized software lets blind lawyer communicate with peers and PCs

ON SITE

BY SALLY CUSACK
CW STAFF

RALEIGH, N.C. — Nine years ago, when John B. DeLuca was a law student at Stanford University, he depended on hired readers and a braille transcription machine to help him research and study for exams. If he needed to generate printed material, he relied on a typewriter.

Now a lawyer at the North Carolina Employment Security Commission, DeLuca uses a Wang Laboratories, Inc. personal computer equipped with a synthesizer board and specialized software to receive and transmit audio messages throughout the department.

Super strides

"Technology has made a lot of advances since then, especially in areas like braille and artificial speech," DeLuca said, adding that the Wang product is his first experience with a PC. DeLuca has been totally blind since he was seven years old.

The Employment Security Commission employs seven attorneys in its legal department to handle contested benefit employment claims and unemployment tax issues. The department installed DeLuca's Wang PC 250 MS-DOS-based machine last spring, and there are currently several PCs in the legal department.

These desktop systems connect directly to a Wang VS 5000 minicomputer over 19.2K bit/sec. lines to access several departmental applications. The VS runs Wang's Office messaging and calendaring program, as well as several legal packages. All the machines send and receive messages from the state's IBM 3090-class mainframe over 3270 communications.

The PCs are equipped with Wang's Freestyle imaging software, and in DeLuca's case, a third-party software package is used for voice synthesis. Called Vert Plus, the program is manufactured by TSI and is a voice-to-text software package that utilizes a synthesizer board to read text as it appears on-screen.

DeLuca simply sits down at his desk, turns on his PC, and Vert Plus reads the electronic mail, memos and interoffice correspondence. The software is configured so that the user may interrupt the electronic voice at any time to reply, and as characters are typed into the system, the synthesizer reads them aloud.

DeLuca said the artificial voice provides him with information on how to log onto the system and then proceeds to read items on a menu. Once a menu has been selected, such as Wang Office Mail, the system indicates what memos have come in, which have been read and which have not.

Vert Plus complements Freestyle's voice and annotation capabilities, and the department relies on the latter for easing case load management and assigning briefs. Cases are scanned into the system with Freestyle and electronically transmitted to the chief attorney, who makes annotations and assigns briefs accordingly.

For the future, DeLuca said he plans to use the PC for document correction and information retrieval. People make certain requests on a fairly regular basis, he said.

"Now I will be able to access this information by myself," he pointed out, adding that he would perhaps feel a little more comfortable with more training on the system, "as the new PC and the constant work load are always competing with one another for time."

Attorney DeLuca *relies on third-party software installed on his Wang PC to read text aloud to him*

NEW DEALS

Zenith awarded notebook contract

Zenith Data Systems, the Groupe Bull subsidiary, announced that it had won the largest contract for a notebook computer yet awarded by a government agency. The U.S. Postal Service has agreed to purchase $6 million in notebook personal computers from Zenith for use by its field data collection group. The machines are Zenith's six-pound Minisport HD portables, with 20M-byte hard drives, backlit screens and 1M byte of random-access memory.

TRW, Inc.'s Customer Service Division has won a multiyear contract with Air Products, Inc. to provide nationwide on-site maintenance and repair services for the company's more than 3,000 microcomputer systems and peripherals. The contract requires a permanent staff of repair technicians to be based at Air Products' Trexlertown, Pa., headquarters and to cover 180 satellite locations.

Mexico City has awarded Intergraph Corp. a $1.5 million contract for expansion of the city's geographic information system (GIS). Intergraph will supply 20 Interpro workstations running the vendor's Microstation GIS environment software. The city's existing land records will be loaded into an Oracle Systems Corp. relational database residing on an Intergraph Interserve 3005.

Interleaf, Inc. said it has been selected to provide document management and electronic distribution technology for Boeing Computer Services' Product Standards Data System. The initial order is estimated at $2.5 million.

Apple shifts Hypercard

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. shifted full possession and responsibility for its popular Hypercard software program over to subsidiary Claris Corp. recently, rekindling fears among third-party developers that they will not be able to compete fairly with a group so closely tied to Apple.

Developers said the inclusion of a Claris-labeled Hypercard application with each new Apple Macintosh, along with Apple's recent decision to scrap long-standing plans to turn Claris into a separate business unit, will give Claris an unfair competitive advantage.

"Each customer will be walking home with a box that is a billboard for Claris," said Heidi Roizen, president of T/Maker Co. in Mountain View, Calif. "It deprives us of fair access to the new user."

Beginning next month, Claris plans to develop, market, distribute and support Hypercard 2.0. Those shipments will mark the debut of the updated Hypercard, which was introduced in June and scheduled to ship in July but has been held up by documentation changes and final testing.

Authoring added

A Hypercard 2.0 authoring system, which is necessary for developing subprograms within Hypercard, will also be sold through Claris.

The decision to put Hypercard under Claris' wing is consistent with Apple Chief Executive Officer John Sculley's statement that software will play an important role for Apple in coming years. John Zeisler, Claris' marketing vice-president, said Hypercard will help the company "focus on turning software into strategic advantage."

Keefe

FROM PAGE 37

time. Maybe.

Journey back to last November's unity pledge. It's too bad that IBM and Microsoft didn't see fit to update that pledge with some concrete information. They have already kept users on hold for 10 months with the vaguest of promises, statements of direction or whatever you want to call it. Popping up almost a year later and saying, "Hey guys, we still wanna do it," isn't very illuminating.

Were I Novell, I'd keep pointing this out to waffling accounts. There are a fair number of Netware users rankled by Novell service and the constant reshuffling of Netware 386's features, but very few will give LAN Manager the time of day unless IBM and Microsoft get their acts together. And given Microsoft's intensified drive into the LAN market, you'd think they'd *want* to inform network decision makers.

If, after 10 months of work and study, IBM and Microsoft haven't come to a conclusion, even some semblance of an estimated delivery date, that they can share with users, well, you have to wonder A) how "committed" they really are, and B) whether any work has actually been done. Of course it has, so what is the holdup, fellas?

A second promise involves licensing the Communications Manager and Database Manager pieces of OS/2 Extended Edition. IBM's Extended Edition outsells Standard Edition. Perhaps if OEMs could license and resell the pieces that make up Extended Edition, IBM's prayers for a jump in OS/2 sales would be answered.

In November, only marketing issues seemed to be standing in the way. Two weeks ago, we were told there are technical issues.

Microsoft also promised that as of June, it would release OS/2 versions of software before the Windows version. This has gone by the wayside since the wild sales of Windows 3.0.

Also key is whether Microsoft will continue its promise to restrict the capabilities of Windows in some areas, such as file serving. Many observers are wondering whether Microsoft is free to develop Windows to the hilt, even to the point of becoming a competitor to OS/2. As both Microsoft and developers have noted, "you can do anything with software." All Microsoft will say is that they have no plans to do so "at this point in time." Whatever that means.

There's an IBM side to the Windows question. If it's a true that the announcement two weeks ago was not driven by reports of a rift, then IBM has had time to think about what it will do with Windows. IBM admits users want it. It sells a few Windows-based packages. But IBM isn't ready to tell us what we want to know — will they bundle or actively remarket Windows? That's real commitment. IBM licenses a lot of stuff it never uses. So what about it?

Now, if IBM does push Windows, how will that be reconciled with Officevision's miserable support for DOS and Windows clients? How will IBM position OS/2 Lite?

Better yet, when will IBM speak?

Keefe is Computerworld's senior editor, PCs and workstations.

Intel promises Satisfaxtion

BY MAURA J. HARRINGTON
CW STAFF

Intel Corp.'s Personal Computer Enhancement Operation introduced a multifunction facsimile board for personal computers last week that is designed to allow a user to easily send a fax directly from a PC application.

The product, called Satisfaxtion, includes a 9.6K bit/sec. fax modem, a 2,400 bit/sec. Microcom Networking Protocol Class 5 (MNP-5) data modem and a gray-scale scanner port all on one board. Satisfaxtion can also be programmed to accept faxes without interrupting the user, according to Richard Bader, general manager of the PC Enhancement Operation.

"I think the price is very competitive, and I'm not aware of anyone with a data modem at that price. But I think the real selling point of this product is the ease of use and installation," said Judy Pirani, associate director of BIS-CAP International, a market research firm based in Norwell, Mass.

Satisfaxtion is available now and costs $499 for the AT and XT bus PC versions and $599 for the Micro Channel Architecture systems, according to Intel.

The quality of the information being sent directly from an application is better than when a fax machine is used because Satisfaxtion sends files as though they were going to a printer, thus eliminating the need for a fax machine to scan the information, which is usually where quality is lost, Bader said. Also, users can send a fax without exiting their application. A user running Microsoft Corp.'s Windows Version 3.0 can send and receive faxes in a background window while using another program, Bader added.

Quantum leap for micro disks

The new wave of midget hard drives is about to hit. Several makers, including Conner Peripherals, Inc., have 2½-in., 20M-byte hard drives, considered ideal for laptop and notebook portable computers. Now, however, the 20M-byte standard has been leapfrogged by Quantum Corp., whose powerful new 2½-in. hard disks, called Go-Drives, will offer 42M and 84M bytes of storage space.

Two Go-Drive models were announced as part of an 8-disk announcement by Quantum, a $162 million per-year maker of data storage devices located in Milpitas, Calif.

Jim Porter, president of Disk/Trend, Inc. in Mountain View, Calif., said there would be a wave of similar 2½-in. products with higher capacity at Comdex/Fall '90 next month.

"The Quantum announcement beats the pack as far as 2½-in. drives go and is the first in a wave of 40M- to 80M-byte [product announcements]," Porter said.

He added that the increase in capacity is necessary to run many current applications and that the higher capacity models would quickly dominate the market.

Sybase updates report writer

BY JEAN S. BOZMAN
CW STAFF

EMERYVILLE, Calif. — Sybase, Inc. responded to customer criticisms about its 3-year-old report writer product recently by announcing a visually oriented version, scheduled to be shipped this month.

The new Sybase Report Workbench is intended to counter products from relational database management system competitors Oracle Systems Corp. and Ingres Corp.

"Report writing capability has been one of the weaker parts of our product [line]," Sybase Executive Vice-President Bob Epstein said. "Now we feel we're in a much more solid position."

Competitive products include Oracle's SQL*Forms Version 3.0, Ingres' Report by Forms and Informix Software, Inc.'s Quickstep, all character-based report systems. Report Workbench is visually based, allowing programmers to create forms by example rather than by writing large amounts of procedural code.

For now, the what-you-see-is-what-you-get environment will be Sybase-proprietary, Sybase marketing manager Perry Mizota said. However, he said, future releases of the product will support such graphical user interfaces as the Open Software Foundation's OSF/Motif and Sun Microsystems, Inc.'s Open Look.

Suzann Larsen, a database analyst at Frame Technology Corp., in San Jose, Calif., has been using a beta-test version of Report Workbench for nearly a year. "The software lays out your reports as if it were on a piece of paper," Larsen said. "You can click on the fields and move them around on the screen. When you like the way it looks, you can use the form you've created to run the report."

The first versions of Report Workbench will run on Sun workstations and Digital Equipment Corp. VAXs. Report Workbench will be sold as part of Sybase's Data Workbench tool set, which is priced from $950 to $82,080, depending on the size of computer used.

NEW PRODUCTS

Software applications packages

Cadam has announced a family of software products designed for users of IBM's RISC System/6000 workstations.

The Professional Cadam family consists of computer-aided design and manufacturing software packages that will reportedly allow engineers to create, visualize, analyze and document designs at their workstations.

The product will be available for RS/6000 Models 320, 520, 530 and 730. Prices range from $4,700 to $100,000, depending on configuration.

Cadam
1935 N. Buena Vista St.
Burbank, Calif. 91504
(818) 841-9470

Computervision has announced Versa-CAD/Macintosh Edition Version 3.0, a software package that enables nongraphic attributes such as part names, cost, size and description to be attached to individual drawing objects or groups of objects via a pop-up dialog box.

The product supports Apple Computer, Inc.'s 8-24GC 24-bit color graphics card and provides users with the ability to read and write Versa-CAD MS-DOS drawing files.

Versa-CAD Version 3.0 costs $2,395.

Computervision
100 Crosby Drive
Bedford, Mass. 01730
(617) 275-1800

Peripherals

Nissei Sangyo America Ltd. has announced the 14MVX multiscanning color monitor for business graphics applications.

The product can adjust to 30- or 40-kHz horizontal scan frequencies and is compatible with IBM's Video Graphics Array (VGA), Super VGA, Apple Computer, Inc.'s Macintosh II and other systems. The 14MVX monitor costs $895.

Nissei Sangyo America
800 South St.
Waltham, Mass. 02154
(800) 441-4832

HSD U.S., Inc. has introduced an 8-bit scanner designed for Apple Computer, Inc. machines that features built-in image manipulation capabilities.

The Scan-X Professional supports a maximum resolution of 1,500 dot/in. for line art and 300 dot/in. for gray-scale images.

It also recognizes 256 shades of gray and includes Scan-X DA, an Apple Macintosh desk tool that enables users to to select scanning operations from an Apple menu while continuing to work in an application.

The product is available now for $1,995.

HSD U.S.
1350 Pear Ave.
Mountain View, Calif 94043
(415) 964-1400

Development tools

Oasys, Inc. has announced Oasys 680 x 0, a software development package designed for cross, embedded or object-oriented development on IBM Personal System/2s running under OS/2.

The line of tools includes the Oasys Optimizing Cross C Compiler, Oasys Assembler/Linker/Librarian and Green Hills C++, a cross C++ compiler.

The Oasys Cross C and Green Hills C++ compilers are based on Green Hills Software, Inc.'s family of optimizing compilers.

Pricing begins at $1,125.

Oasys
230 Second Ave.
Waltham, Mass. 02154
(617) 890-7889

Board-level devices

Rasterops Corp. has announced 8- and 24-bit color graphics boards designed for use on Apple Computer, Inc. Macintosh systems.

The Rasterops 24S and 8S support Apple 13-in. or compatible color displays that feature 640- by 480-pixel resolution. Other features include hardware pan and zoom functions.

Rasterops 8S is priced at $695. Rasterops 24S is being sold as a bundled package with the Rasterops Accelerator for $1,195.

Rasterops
2500 Walsh Ave.
Santa Clara, Calif. 95051
(408) 562-4200

Atronics International, Inc. has introduced an Intel Corp. I486-based miniature AT-size motherboard designed for high-end applications.

The ATI-486/B measures 8½ by 13 in. and is available in 25- and 33-MHz versions. The board includes 8M bytes of built-in memory and has an optional 32K, 64K or 128K bytes of external cache. It features compatibility with multiuser versions of DOS, Xenix or Unix operating systems.

The product is priced at $3,495 for a 1M-byte unit.

Atronics International
1830 McCandless Drive
Milpitas, Calif. 95035
(408) 942-3344

"Our man in Geneva can now get vital information right to the desks of our traders on four continents. In seconds."

"Only BANYAN could have done it."

From an interview with Eric Dickstein of Continental Grain.

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How big is your network?

"We have over 700 users worldwide on our network, with 24 servers in New York alone. 4 each in Chicago and Geneva. Plus single servers in another 12 offices. Recently we added Zaire, and we've discussed putting them in Hong Kong, Singapore, and South America."

Do you use third-party lines?

"Yes, depending on needs and economics. Mostly, it's GEIS, plus some point-to-point lease lines and dial-up facilities. Even a dedicated 56KB satellite link. And it's all totally transparent."

Why did you select VINES?

"When we started this network 5 or 6 years ago, Banyan was the only company that could satisfy our needs. Today, in my opinion, it still is."

Banyan's VINES is the only network operating system that can effortlessly grow as your company does—even on a global basis. For a further description of Continental Grain's networking challenges and solutions, write or call us at 800-828-2404 (in MA 508-836-2828).

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Bringing far-flung LANs aboard

Vendors take many tacks to link LANs with corporate headquarters

BY ELISABETH HORWITT
CW STAFF

This fall, vendors are moving in several different directions to address users' growing need to tie long-isolated local-area networks into the corporate backbone and data center structure.

Cisco Systems, Inc.'s recently introduced low-end bridge (see story page 52), for example, targets companies that want to link hundreds of "remote LANs with a few nodes to each other and to corporate headquarters over an existing Decnet or TCP/IP backbone," Cisco spokesman Edward Kozell said. "Right now, a lot of these companies are using a dial-up modem to call up a minicomputer file from a PC LAN. With a bridge, they can exchange files directly between PCs or between a PC and a mini running Novell, Inc. Netware 386, LAN to LAN."

LAN philosophy

Mervyn's, a subsidiary of Dayton Hudson Corp., "had a philosophy to integrate our LANs with the corporate data center from day one because we got into it so late and realized that we had to," said Chris Blazak, the department store chain's manager of installation service and support. Mervyn's finished a company-wide implementation of Banyan Systems, Inc. LANs approximately one year ago, he added.

The company chose Banyan precisely because it has built into its server architecture the ability for LANs to talk both to one another and to IBM corporate Systems Network Architecture (SNA) systems, Blazak said. "We knew that users want to get to the mainframe and also to applications that are just on the LAN."

Cisco plans to go after Banyan users soon, incorporating support of the LAN vendor's Virtual Networking Software into its routers next month, Kozell said.

Cisco also plans to announce a frame relay software package at this month's Interop '90 conference that will allow its routers to transmit at up to 2M bit/sec., Kozell said. This will be an important feature for users whose inter-LAN traffic has grown beyond the 64K bit/sec. limits of traditional X.25 packet-switched networks, he added. Cisco plans to demonstrate interoperability between the product and Stratacom, Inc.'s fast-packet T1 switch at Interop and to ship the offering on Nov. 1, Kozell said.

Several announcements at last week's Tele-Communications Association '90 show targeted companies that share Mervyn's internetworking needs but do not have the right capabilities built into their LANs.

Data Switch Corp. in Shelton, Conn., announced Unilan Communicator, an intelligent wiring hub that is said to provide a wide range of LAN interconnectivity capabilities in a modular architecture.

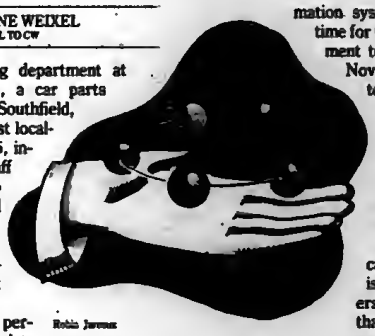
Priced from $20,000, the hub is said to provide local connections between 4M bit/sec. and 16M bit/sec. token-ring systems

Continued on page 52

FEATURE: LAN SUPPORT

Balancing autonomy with control

BY SUZANNE WEIXEL
SPECIAL TO CW



Robin Jareme

When the accounting department at Federal-Mogul Corp., a car parts supplier based in Southfield, Mich., installed its first local-area network in 1985, information services staff wanted nothing to do with it. Departmental end users either supported the LAN themselves or contracted for support from the vendor.

Five years and six personal computer LANs later, however, "we realize how integral LANs are to the company's operations; we realize that we must exert some influence over how they are installed and how they are maintained," says Tom English, the company's vice-president of information systems. When it came time for the accounting department to upgrade its original Novell, Inc. operating system, IS was ready with a list of standards, guidelines and strong opinions about exactly what type of systems the accounting department ought to use.

Federal-Mogul's case is by no means an isolated one. IS managers and consultants say that decentralized companies are in the midst of a LAN support dilemma. They recognize the need for networks and applications at the local level, where users are more in tune with what they need in order to do their jobs well, but

Continued on page 46

PC networks kinder to bottom line

BY JIM NASH
CW STAFF

Gasoline prices are up, and mortgage rates are up more often than down, but at least one thing is cheaper than it used to be.

According to a survey of 100 large companies, the cost of installing and running a local-area network made up of 40 personal computers for three years is about half that of minicomputers and mainframes.

David Ferris, president of Ferris Networks, Inc. in San Francisco, said each mini or mainframe terminal costs large companies an average of $14,300 annually for the systems' first three years of operation. In contrast, Ferris said, companies spend an average of $6,400 for each PC in a 40-machine network.

"If you are talking dollars and cents, it is cheaper to have a network," said Victor Delgadillo, LAN manager at Lillie Rubin Affiliates, Inc. Lillie Rubin Affiliates is a Miami-based chain of 82 women's apparel stores. "Our entire network cost less in dollars than the one-year maintenance contract we have for our Bull mini."

Included in his average for PC LANs, Ferris explained, were such hidden costs as salaries for users and systems administrators, communication links, maintenance and training.

Continued on page 52

Autonomy

CONTINUED FROM PAGE 45

users can also be notoriously lax about such LAN support staples as backup, maintenance, documentation and updates. How is IS balancing local autonomy and flexibility with some form of central oversight?

"Clearly," says Jeffrey Kaplan, a director at The Ledgeway Group in Lexington, Mass., "there has to be a mixture of centralized and decentralized support."

At Federal-Mogul, the cross-functional organization of the company had led to the decentralization of application development into individual business units. However, support, which was mainframe-oriented, had remained centralized. The need for local-level support became apparent as end users were increasingly asking their department's application developers LAN-related questions.

According to English, Federal-Mogul formed the PC Support Group, a cross-functional team that is part of the IS department. Members of the PC Support Group are distributed among the user departments along with the application developers. Now, each business unit has its own IS group on-site with at least one dedicated PC support person responsible for administering the LAN.

The distributed IS group reports to both the vice-president of IS and the president of the business unit.

According to Cheryl Bachleda, a telecommunications analyst responsible for developing a long-term plan for corporate network integration, PC Support Group representatives are on-site to troubleshoot, add users to the network and maintain printers, drives and monitors. That frees up the central IS telecommunications staff to focus on larger issues such as standards and integration.

Andy Freeberg

Bernstein & Co's Reid: *Users "have to play by our rules."*

This approach is becoming more typical, companies say. A key concern is freeing up central staff for more strategic activities. "Ideally," says Michael Hurwicz, president of MTI Group, an Eastsound, Wash.-based consulting company specializing in LANs, "every work group has at least one person assigned to it for first-level LAN support. Sometimes it is an IS person, and sometimes it is someone from that department who happens to be the most involved with the LAN or the applications run on the LAN."

In Federal-Mogul's case, it is someone from the IS side who zeros in on the end users' business needs, Bachleda says. The departments retain their autonomy, but they have someone who understands both IS and the department's points of view to help them do their planning, budgeting and purchasing.

Still, with seven different LANs and four different LAN operating systems, it is difficult to implement any kind of overall corporate support strategy, Bachleda says. But with Federal-Mogul's planned conversion to one Ethernet backbone network, IS must rely on the PC support group representative to translate the corporate network strategy into terms that the business unit can understand.

Local presence

Even in situations in which corporate IS departments control the selection and distribution of all decentralized technology, PC LAN support has drifted down to the local level. At United Parcel Service, where there are more than 300 LANs with approximately 4,500 workstations installed in over 200 sites worldwide, a multilevel hierarchy of support is used to keep the systems up and running.

According to Steven Heit, Information services planning manager at UPS in Paramus, N.J., corporate standards are developed and controlled centrally to facilitate support, but given the large number of user sites, IS "cannot organize an effective centralized support structure."

For instance, Heit says, UPS has 60 delivery information offices in the U.S. where a customer can call to find out the status of a package. Each office runs a standard setup — an application and communications system, called the Trace Information Processing System (TIPS), on token-ring hardware running the Novell operating system. Typically, each LAN has between 30 and 40 workstations.

The first tier of support for each delivery information site is handled by a supervisor from that business area. The supervisor is not part of the IS staff, Heit emphasizes, but has been trained by IS to perform the day-to-day PC LAN administration tasks of adding and deleting users, controlling password protection, reporting statistics such as disk capacity and taking care of general troubleshooting.

If the supervisor encounters a problem that cannot be solved at the local level, such as a board failure, he funnels it upward to the district office technical support staff. Typically, Heit says, there is one or more IS technical support person located at each of UPS' 60 district offices. These people are responsible for supporting all the different LANs as well as other technologies that reside within their district. They are trained to diagnose hardware and software problems and to resolve the simple ones such as board replacements.

Heit says that 90% or more of all PC LAN troubleshooting is handled at the local or district level. But if there is a complex or unusual problem, such as a software malfunction, there is a dedicated LAN support staff made up of a dozen or so IS employees who act as an on-call help desk for the district support technicians.

UPS has arrived at a combination of localized and centralized support, according to Heit, with end users and IS sharing control. For instance, application updates are developed centrally, he says, so IS can be confident that every office is using the same software. On the other hand, the updates can usually be installed by the local LAN manager, so IS does not have to spend time performing a relatively simple task.

It is when the issue of shared corporate information comes into play, says Ledgeway's Kaplan, that many IS departments discover the need for centralized PC LAN support. If a department forgets to back up its LAN and loses data, it alone may suffer. However, once PC LANs start linking into a corporate network and transferring information among departments, such negligence affects the company as a whole.

For Federal-Mogul, this means reassessing its support structure once its Ethernet wide-area network is in place. With one network, the central staff will be forced to assume a more active role.

According to Bachleda, from the server out to the end user, localized support will still be provided by the distributed PC support group. However, Bachleda predicts a need for a centralized network administration team.

Central authority

There is no question in George E. Reid's mind that support must be done centrally. Reid is MIS director at Sanford C. Bernstein & Co., an investment management and Wall Street brokerage firm with approximately 400 employees spread across three buildings in New York and New Jersey. The company has 50 PCs and 250 workstations all sharing a common network.

"Basically, we tell the departments that they have to play by our rules because we have to be able to support [the network]," Reid says.

In general, end users cooperate, but there are a few renegades. One portfolio manager likes to write his own applications and integrate them with existing products on the LAN. "We try to give him latitude, but every once in a while we do bump into him," Reid says.

Reid's solution was to set certain limits that the manager must meet if he wants to remain on the network.

Imposing restrictions on users is a matter of security and data integrity. In most cases, it is just a way to keep the user files organized and consistent so that if they do have problems, IS can help them.

"A network assumes you have a group of people doing something in common," Reid says. With that in mind, IS feels justified controlling memory allocation and keeping directory structures uniform.

Still, Reid says, IS recognizes that users need some degree of independence. "We try to be as nonintrusive as possible," he says.

Weixel is a free-lance writer based in Framingham, Mass.

UPS' Heit *says central support is not possible due to a prohibitively large number of user sites*

Recruiting support

To deal with the local vs. central support issue, some companies take the hierarchy one step further. They hire an outside source such as a vendor, value-added reseller or consultant to back up the central IS support team, according to Michael Hurwicz, president of MTI Group, an Eastsound, Wash.-based consulting company that specializes in local-area networks.

Most firms that choose this route have found it difficult to assemble a central team that is large enough to keep up with the demands of the end users as well as perform the strategic network functions required of a corporate department.

Given the high personnel turnover rates as well as the rapid changes in applications and network technologies, Hurwicz says, outside sources can go a long way in taking the pressure off the backs of central network support staff.

Car parts supplier Federal-Mogul is currently involved in a trial partnership with San Jose, Calif.-based Businessland, Inc. According to Cheryl Bachleda, a telecommunications analyst at Federal-Mogul, the company is evaluating the idea of contracting with Businessland to provide specific support services in order to help its IS department in the future, when the company completes its conversion to an integrated Ethernet network.

Bachleda is not entirely sold on the idea, however. "In the past, we've had a hard time relying on vendors for support when it comes to issues involving integration," she says.

SUZANNE WEIXEL

Expert panel says now is time to put brakes on deregulation

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — A panel of telecommunications experts said the U.S. stands at an important crossroad with respect to further deregulation of the industry, and several officials attending a conference here said a wrong turn now could have consequences as unpleasant as the deregulation of the savings and loan and airline industries.

Most of those speaking at a recent seminar sponsored by the Competitive Telecommunications Association (Comptel) said deregulation of AT&T has gone far enough for now. They urged the Federal Communications Commission to back away from recent proposals that would substantially free the telecommunications giant from restrictions that have existed since the breakup of the Bell System more than six years ago [CW, July 9]. "The FCC has launched regulatory clay pigeons to prematurely deregulate AT&T, and we must be ready to shoot them down," Rep. Edward J. Markey (D-Mass.) said. "AT&T is still the dominant carrier by any traditional economic measure."

Markey, who chairs the influential U.S. House of Representatives Telecommunications and Finance subcommittee, pointed to AT&T's market share — 65% of the long-distance market, which is five times that of the No. 2 provider — as evidence that it would have an unfair advantage in the marketplace were it not for inhibiting regulations.

Running on empty

However, AT&T sees its market-share glass not as two-thirds full but rather as one-third empty and falling fast. William Catucci, an AT&T corporate vice-president, pointed out that AT&T's market share has plummeted from 90% to 65% in recent years, losing 10 percentage points in 1988 alone. He said that's evidence of vigorous competition. "Somebody is misinterpreting the facts. The FCC is not. If we're dominant, what good does it do? We can't raise prices, and we can't take market share from competitors."

The FCC contends that AT&T no longer dominates its competitors in several markets, particularly in providing voice and data services to the largest, most sophisticated corporate buyers. The commission buttresses its contention by citing the steep loss of market share in that market segment and the industry-wide surplus network capacity it says prevents excessive pricing by any company.

Some now say the industry has become an oligopoly, with AT&T, MCI Communications Corp. and U.S. Sprint Communications Co. owning 95% of the market. That concentration of market power leads to higher prices overall, critics charged. "I feel that the pricing war is over in the telecommunications industry," said Norman C. Frost Jr., director of investment banking at First Boston Corp. "[Wall Street] sees non-price competition as being the dominant factor in the future."

Richard Firestone, chief of the FCC's Common Carrier Bureau, suggested that large corporate users are able to negotiate favorable prices while fostering the development of new services. "You can't just look at [overall] market share; you have to look at the customers. Do large telecommunications customers need the intervention and protection of the government? They're some of the most sophisticated buyers in the country."

Catucci acknowledged that AT&T does charge higher prices — by some 5% to 10% — but he said customers are willing to pay that premium for higher quality telecommunications services.

One FCC proposal would allow AT&T to write contracts with single users for customized services at discount prices, just as its competitors may now do. In return, the FCC would require AT&T to make terms of the contract public. Brian Moir, general counsel for the International Communications Association, objected to disclosure of single-customer offerings, saying that it might reveal proprietary user information, including information about confidential network configurations. "We need regulators to be sensitive to user concerns about network disclosure," he said.

The FCC is now considering public comments on its proposals, and it is not expected to announce its decisions or next steps until early next year. But the bet at the conference was that the commission would backpedal on at least some proposals because of the negative public comment from nearly every party except AT&T. Terry Haines, chief minority counsel for the House Telecommunications and Finance subcommittee, said the gung-ho deregulatory fervor of FCC Chairman Alfred C. Sikes is being challenged internally by other more cautious commissioners. He predicted that the FCC is moving away from "the ramming-down-the-throat approach of the past."

However, Rep. Jim Cooper (D-Tenn.) was not so sure. "Sikes' statements [about AT&T deregulation] have been so positive, so one-sided, it's unlikely he'll change his mind."

Seeking cure for network Achilles' heel

BY JOANIE M. WEXLER
CW STAFF

With the burgeoning trend toward linking LANs into corporatewide networks, the market for integrated network management couldn't get any riper without falling off the vine. Enter Spectrum, a next-generation product introduced recently by Cabletron Systems, Inc.

The $105 million-per-year Cabletron — which six years ago consisted of 10 people selling cable out of a garage — has dared to go up against the likes of AT&T, IBM and Digital Equipment Corp. and is purporting to finally offer the user community a centralized, enterprisewide network management system.

Cabletron's artificial intelligence-based system will be one of a half-dozen packages running the Interop '90 show network next week in San Jose, Calif. It reportedly allows a user sitting at one console to view all seven communications layers of a heterogeneous network from various perspectives, such as function, topology or organization.

Business Research Group, a Newton, Mass.-based market research firm, said earlier this year that 75% of 300 large companies it surveyed plan to increase their integrated network management spending by up to 48% between 1990 and 1992.

Open to change

According to Datapro Research, Inc. in Delran, N.J., IBM's Netview enterprise manager has 10,000 licensees; Systems Center, Inc.'s Netmaster, which competes with Netview, has 700 to 1,000 installations. Datapro said that other vendor installations are negligible, leaving a large user community open to new offerings.

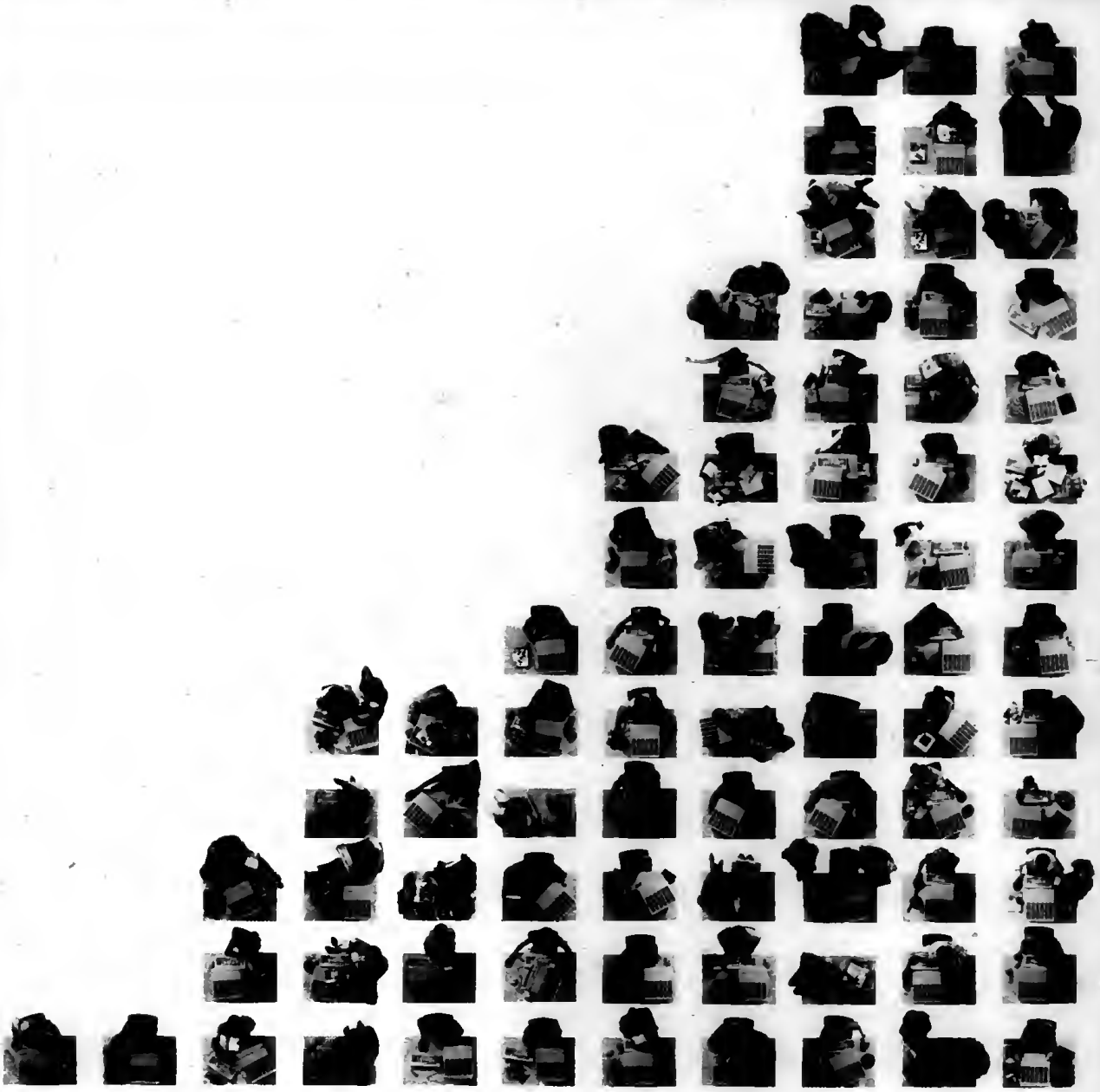
"This is an area in which an early player will be able to score big," agreed Walt Magnussen, a network planner at Texas A&M University in College Station who has been testing Spectrum to manage a jumble of multivendor networking equipment. He said he will probably purchase the product. "One of the things we like about Cabletron is that it is aggressive about adding new interfaces," Magnussen added.

Ray Parcell, a computer systems specialist at the Naval Mine Warfare Engineering Activity in Yorktown, Va., uses a Cabletron smart hub to connect Ethernets running over both thick and thin coaxial cables.

"Cabletron is a fairly new vendor to me, but sometimes you need a specialist [unlike full-service vendors IBM, AT&T and DEC] to serve your needs," Purcell said. "Because Cabletron doesn't sell computers, it doesn't have anything else on its mind."

Spectrum specifics

Availability: January.
Hardware: Sun Microsystems, Inc. Sparcstations. Intel Corp. 80386-based PCs, DEC workstations and IBM RISC System/6000 workstations to be phased in.
Operating system: Unix System V or Berkeley 4.2 (OSF/1 support planned).
Graphical user interface: Open Software Foundation's Motif.
Network management protocol support: Simple Network Management Protocol, 802.1B, Internet Protocol's Ping. Common Management Interface Protocol by end of summer 1991.
Recommended RAM: 16M bytes.
Price: $50,000 to $150,000.



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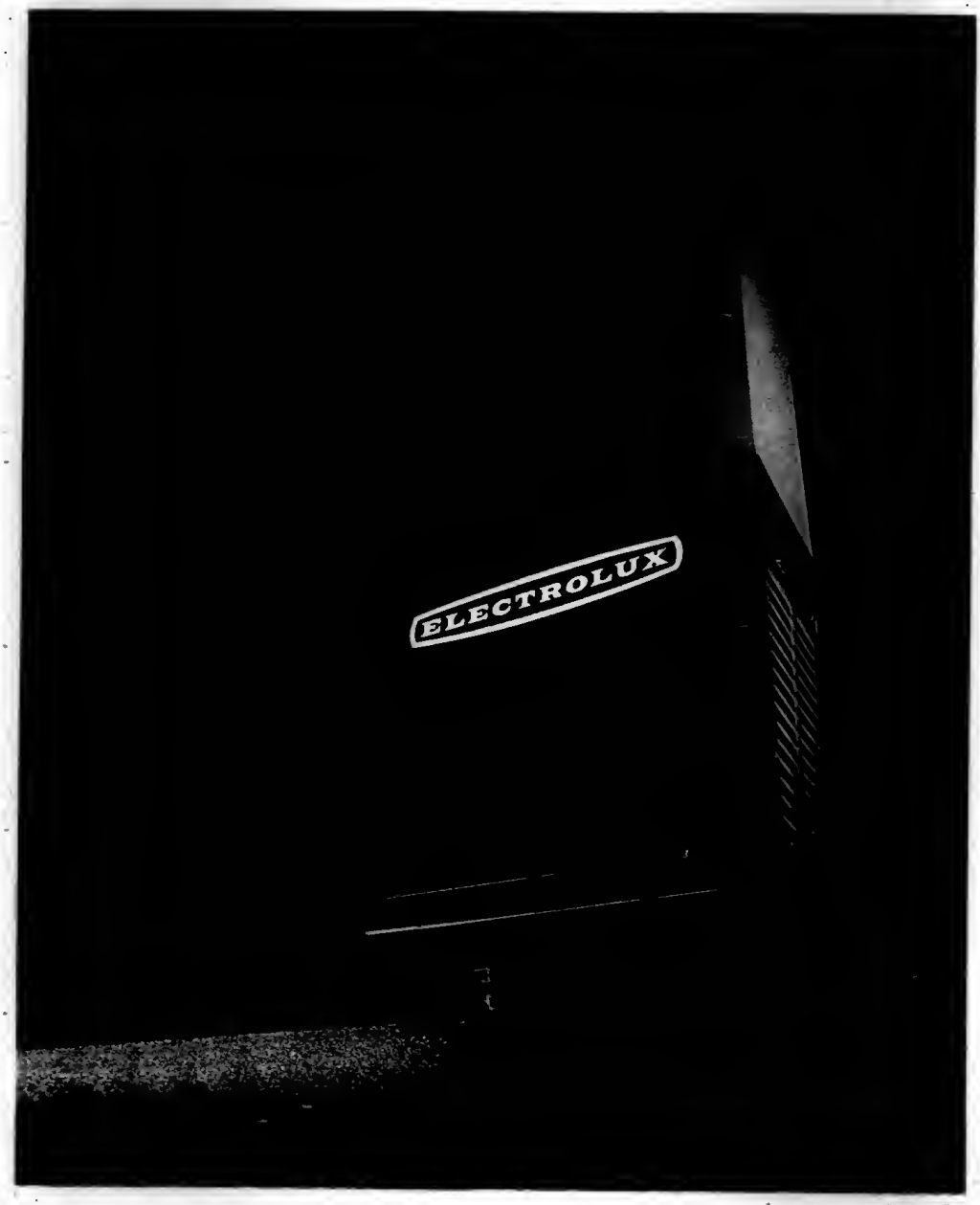

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That's when America's premier floor care company chose NetWare,® the only PC-based network operating system that's in its eighth generation. "We chose NetWare because it's a proven, flexible network solution," recalls Skelton.

In addition to sharing information, NetWare allows Electrolux to share expensive software. In fact, NetWare is compatible with thousands of PC-based applications. And since NetWare is hardware independent, there's no fear of hardware incompatibility or obsolescence.

Skelton puts it this way, "NetWare is the network of choice because compatibility with other products is built in. It gives us an open platform to connect multiple workstations, and the flexibility to choose many routes for network integration."

In just three years, Electrolux has automated from six standalone PCs to an integrated business-wide network with mainframe connectivity, remote access and a workstation on every desktop. And Novell has helped meet its growing MIS needs with solutions and support that only the responsible leader in network innovation can provide.

Call 1-800-LANKIND for your 1990 NetWare Buyer's Guide. And learn more about how NetWare cleared the way for a business-wide network at Electrolux.

The Past, Present, and Future of Network Computing.

LANs

FROM PAGE 45

running on shielded and unshielded twisted-pair cable, as well as fiber.

A separate Channelconnect Communicator module, starting at $18,000, can link Ethernets into the central hub or directly to a mainframe channel.

In addition, the hub is said to link LANs to T1 long-distance connections, RS-232 and V.35 devices and IBM host front ends via Data Switch's Universe matrix switch line.

By using a matrix switch to link LANs to hosts, the user gains the ability to reroute transmissions automatically to an alternate port or line when the primary connection fails, Data Switch spokesman Richard Pasqua said.

Data Switch also announced support of IBM C lists on its Totalnet network management system. This allows IBM's Netview to send commands to reconfigure or initiate testing on Universe switches, according to Pasqua.

Also at TCA, Broomfield, Colo.-based McData Corp. expanded its Linkmaster 4174 family of SNA controllers with an interconnect controller that is said to allow Ethernet users to send and receive SNA packets.

The 44R is said to support up to 160 host sessions on 32 coaxial terminals, half of which can be Digital Equipment Corp. Local Access Terminal sessions. Scheduled to ship this month, the product is priced at $11,863, with software costing an additional $3,000.

Another internetworking announcement at TCA was Micom Communications Corp.'s Marathon 5K fast-packet multiplexer, which is said to integrate data, voice, facsimile and LAN traffic over the same low-speed lines.

The Marathon 5K is said to compress the bandwidth taken up by data by up to 75% and to reduce a 64K bit/sec. voice channel to 4.8K or 9.6K bit/sec. One 19.2K bit/sec. line can handle communications from 10 terminals at 9.6K bit/sec., plus two voice lines, Micom said.

Fast-packet multiplexing is used to combine data, fax and voice transmissions over the same line with minimum delays, according to the vendor.

The base model Marathon 5K comes with six ports, one of which can be a 64K bit/sec. port.

Prices begin at under $3,000.

Linking far and near

Tyson Foods, Inc. is close to choosing McData's Linkmaster controllers as a way to integrate connections between remote sites and data center hosts for both the fast-food chain and its Holly Farms subsidiary.

Right now, Tyson's outlets use an extended Ethernet backbone to communicate with DEC VAXs at the parent company's Springdale, Ark., headquarters, according to Paul Lothian, Tyson's staff analyst. Meanwhile, Holly Farms fast-food outlets use IBM's SNA to hook up to the Tyson subsidiary's IBM 4381s and 4361s.

Amalgamating the two sets of connections makes sense, Lothian said, because the two fast-food chains often have outlets near each other and because Holly Farms sites need to access Tyson's data center as well as their own. However, DEC provided limited solutions for such integration, Lothian said.

McData's recently announced Linkmaster 4174 Model 44R provides a way for remote Holly Farms IBM terminals to send SNA packets over the Ethernet backbone to Tyson's DEC data center, Lothian said. And Holly Farms can install a Linkmaster 6100E at its own data center, which allows Tyson's DEC users to access the IBM hosts, Lothian said. "So the same backbone links our systems and their systems."

ELISABETH HORWITT

Cisco on internetwork router detour

BY JIM NASH
CW STAFF

Cisco Systems, Inc.'s new low-end internetwork router marks a departure from its previous bridge and router products. The Integrated Gateway Server (IGS) differs from its sister products in appearance, price and marketing.

IGS is a single-board, nonexpandable two-port internetwork router that supports 15 communications protocols. Cisco is marketing both a local version, which connects two Ethernet networks or two segments of an Ethernet backbone, and a remote version with an Ethernet port and a high-speed serial port.

Cisco has departed from its previous marketing strategy in its decision to license the core of IGS as a board to Synoptics Communications, Inc., Cabletron Systems, Inc. and Chipcom Corp.

No delivery dates for the licensed products have been announced. However, the first fruits of one of the alliances will be brought out at next month's Interop '90 conference, a Cisco spokesman confirmed.

Appealing packaging

IGS' in-the-box incarnation will be sold through the firm's direct sales force, along with the rest of Cisco's product line. The new router comes in a smaller, more aesthetically designed box. The local version sells for $4,995 and the remote for $5,495.

Coyne Gibson, MIS computer operations manager at Convex Computer Corp. in Richardson, Texas, said he uses Cisco routers to link 16 offices nationwide using workstations and supercomputers. Gibson said IGS surpasses Cisco's previous products by having a smaller, less obtrusive chassis. Gibson said the new chassis should help the product gain acceptance in smaller workplaces.

However, IGS' target market is large internetworks linking 100 to 200 sites, according to Bruce Byrd, product line manager at Cisco. Selling far smaller quantities of the router, Byrd said, might occur through telemarketing.

An aerospace systems analyst who declined to be identified said that his large internetwork contains 70 Cisco routers that have performed with few problems. The source also indicated that his firm would likely adopt IGS in the future given its past experience with the products.

PC networks

FROM PAGE 45

He did not include the cost of downtime for either type of system. Ferris estimated that the purchase of a $1,000 backup system could add $105 to the per-PC cost each year.

"If you are looking at the set of applications that you can run on both minis and PCs, that statement is obvious," said Todd Booth, senior software specialist at Quotron Systems, Inc. Maintenance and personnel costs often drive up the price of large systems, Booth added.

Quotron, part of Citicorp, is one of the world's largest financial information brokers. It is heavily involved with both DOS- and Unix-based networks. The firm runs a mix of 3Com Corp., Novell, Inc. and Microsoft Corp. networks.

But there are costs involved in the use of minis instead of PC LANs that will not show up in internal budgets, he cautioned. "If you are going to put really dumb terminals and really canned environments on the desk, minis are the right choice." Those setups, however, can be competitive liabilities for a company if its adversaries are automating with more versatile LANs.

There are fewer general applications used by businesses that require even a mini's brawn. The capabilities of each platform are rising in unison, Booth said. "PC LANs do what minis used to do. Minis do what mainframes used to do, and supercomputers do what nobody thought could be done."

Even the process of purchasing a mini can be more expensive, Delgadillo said. "You can't just go up the street and buy them. You have to sit down and negotiate and buy service contracts and everything."

NEW PRODUCTS

Local-area networking hardware

Emulex Corp. has announced a printer server that allows up to four parallel or serial printers to be shared on an Ethernet network.

The Performance 3000-TL is compatible with Digital Equipment Corp.'s Local Area Transport (LAT) protocol and with the Transmission Control Protocol/Internet Protocol standard. Users of LAT and TCP/IP host computers can transparently queue print jobs, and remote printers can be operated via a single coaxial connection, the vendor said.

Pricing for a basic unit starts at $2,595.

Emulex
P.O. Box 6725
3545 Harbor Blvd.
Costa Mesa, Calif. 92626
(714) 662-5600

Ablelec has announced a line of file servers, local-area network stations and Ethernet boards.

The AFS/386 file server ($3,995) is a 32-bit system that features 64M bytes of random-access memory, a 64K-byte cache and full- and half-height 40M- to 650M-byte hard disk drives.

The ALS-2 Lanstation is an Intel Corp. 80286-based MS-DOS computer that is available in 12-, 16- or 20-MHz versions for $1,495. It can be expanded to accommodate OS/2 and Unix software packages.

The AE-2000 ($325) 16-bit Ethernet board features 64K bytes of dedicated buffer memory.

Ablelec
4971 Fremont Blvd.
Fremont, Calif. 94538
(415) 659-1544

Gateways/Bridges/Routers

Xyplex, Inc. has announced an interoperable remote bridge card that was developed as part of a strategic technical partnership with Vitalink Communications Corp.

Maxserver 6510 provides wide-area network link interoperability via the Vitalink Communications Protocol. It supports the IEEE 802.1D Spanning Tree Protocol and is compatible with Wanmanager, Vitalink's network management system.

The product began shipping last month and is priced at less than $4,000.

Xyplex
330 Codman Hill Road
Boxboro, Mass. 01719
(508) 264-9900

Remotely Possible, a remote control software package announced by Avalan Technology, Inc., enables users of personal computers attached to a Novell, Inc. local-area network to remotely control and monitor other LAN-based PCs.

The product provides users with the ability to control remote applications with a mouse. It operates over Novell's Netware topologies and requires a remote PC with 16K bytes of random-access memory.

License fees are priced from $199 to $1,299, depending on the number of users.

Avalan Technology
747 Washington St.
Holliston, Mass. 01746
(508) 429-6482

BICC Data Networks, Inc. has announced the Isolan Etherconnect System/4 (ECS/4), a multimedia intelligent hub designed for small-office local-area networks.

The ECS/4 can accommodate up to four line cards and more than 400 users. It enables networks to be managed remotely or locally without requiring a dedicated personal computer.

The system is priced at $1,595. Line and management cards are sold separately.

BICC Data Networks
1800 W. Park Drive
Westboro, Mass. 01581
(508) 898-2422

IDC WHITE PAPER

OSI: The Global Network Architecture

OSI: THE GLOBAL NETWORK ARCHITECTURE

AN IDC WHITE PAPER FOR INFORMATION SYSTEMS MANAGEMENT

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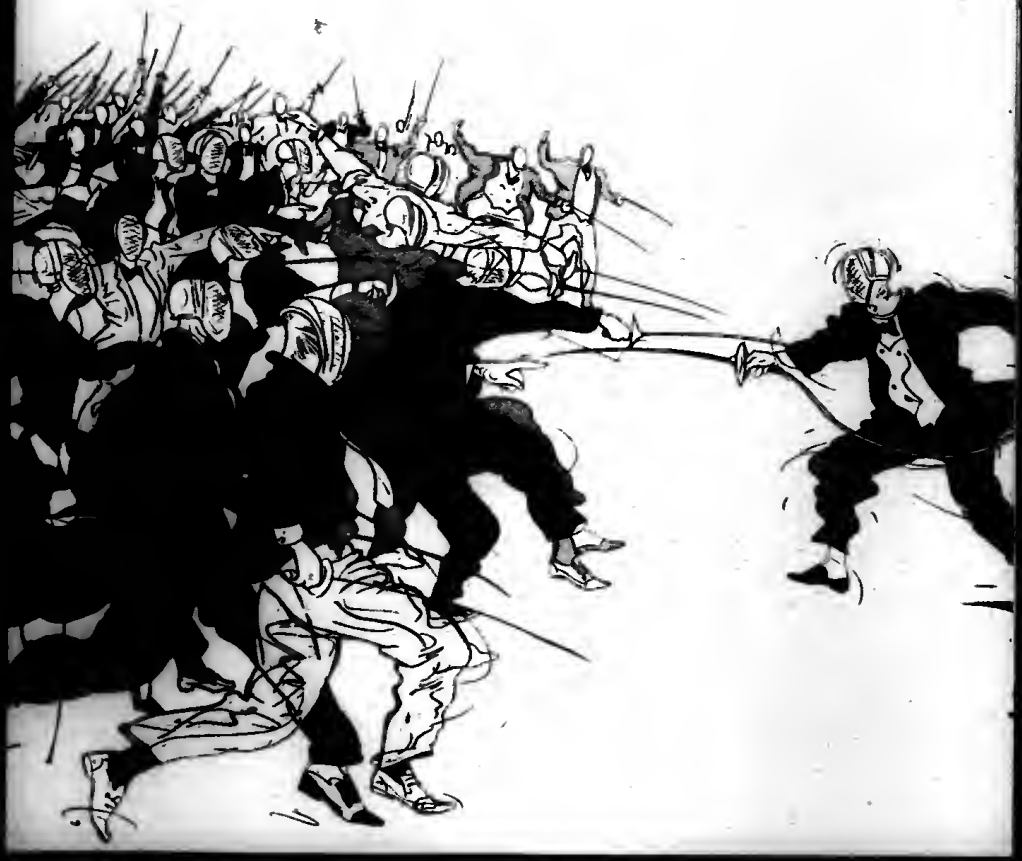
In The 90s, Your Company Must Learn To Thrive Amid Unprecedented Change.

As Global Competition Systems Must Change To



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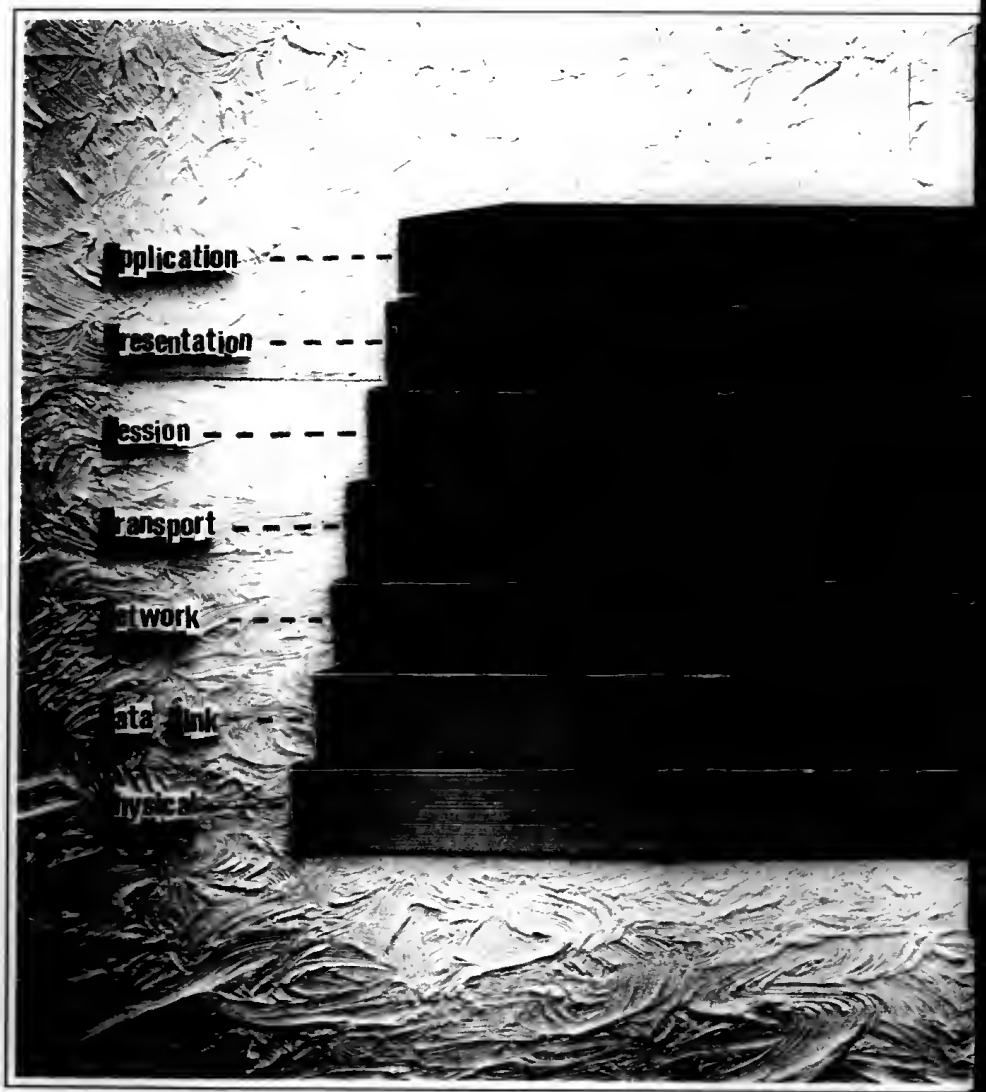
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OSI

THE PAST THREE DECADES HAVE BEEN DOMINATED BY THE EXPANSION OF NEW AND NECESSARY COMPUTER ARCHITECTURES IN RESPONSE TO A DEVELOPING HIERARCHY OF USER NEEDS. DURING THE 1960s, THE BURGEONING POPULATION OF MAINFRAMES SERVICED THE INCREASING DEMANDS OF BACK-ROOM PROCESSING. DURING THE '70s, MINICOMPUTERS PROVIDED SPECIFIC APPLICATION SUPPORT FOR NONDATA PROCESSING PROFESSIONALS. THE '80s SAW PERSONAL COMPUTERS AND WORKSTATIONS SATISFY THE CRAVING FOR END-USER COMPUTING. UNFORTUNATELY FOR THOSE PEOPLE PLANNING INFORMATION SYSTEMS IN THE '90s, ALL THE INNOVATION AND CHANGE OF THE PAST 30

years have lead to a more complex, rather than a neater and cleaner, computer arena. Each new generation of hardware has survived instead of being succeeded. As a result, the networks of today must accommodate all of them - mainframes, minicomputers, PCs and workstations.

Consequently, the challenge for the '90s is not to rid ourselves of older architectures but rather to blend the new with the old in some more highly useful and manageable fashion. The '90s will undoubtedly be remembered as the decade in which computers of all kinds finally provided a whole information system that was functionally greater than the sum of its parts. The following research paper is meant to provide a general overview and status report on the progress of the Open Systems Interconnect (OSI) model for computer communications. It is not meant to be a technical journal, nor is it composed of OSI hype. Instead, it paints an optimistic, yet honest picture of the next big step in the evolution of networking computers to computers, applications to applications and, most importantly, end users to information.

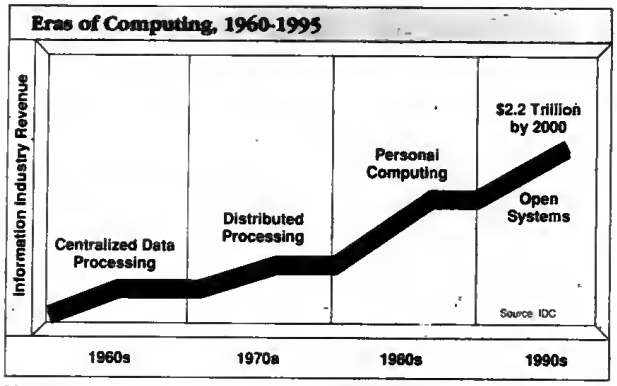
EVOLUTION TO OSI

History of OSI

It became quite apparent by the mid-1970s that computers were utilized more effectively when properly linked together. With additional advancements in distributed processing on the horizon, it became equally evident that in order to prevent users from becoming entrapped in proprietary vendor network architectures, standardization needed to take place. Since 1946, the International Standards Organization (ISO) has been involved in worldwide standards development and adoption on behalf of its almost 100 represented countries. In 1977, the ISO decided to expand its standards-setting work to include computer-to-computer communications. At that time, a formal working group was given the charter to develop the OSI Reference Model.

Why OSI?

Information systems are fraught with network architectures that are essentially closed to outsiders. In this case outsiders could be either vendors that are not already installed on the network or users that operate within a separate and different network environment. On one hand, this closed posture provides the installed vendor tremendous leverage in any system expansion. On the other hand, it severely limits the choices for users examining new hardware, operating systems and applications as well as communications and networking equipment and services.



OSI will follow in the footsteps of mainframes, minicomputers, personal computers and local-area networks as a catalyst for information industry growth

The OSI model holds the promise of freedom from these constraints by providing a networking platform on which all vendors have an equitable chance of competing for new hardware and software systems business. In this environment, the power rests with the user community, allowing implementation decisions to be based on the best future as opposed to the installed past.

Current Status

Work has progressed over the last 12 years to the point that the primary functions of OSI are firmly adopted as international standards and are able to be actually implemented and subsequently incorporated within network architectures. Almost every major computer vendor will deliver full seven-layer-OSI-based networking systems during 1990. Those vendors that significantly fall behind this schedule will face user backlash that will be difficult to overcome in the future.

For the users, these primary functions provide the base level with which to construct a networked system. Beyond these, however, there is still much work to be done. OSI network management, although having progressed nicely over the last eight years, will still require at least two more years of effort. Also, OSI application-level standards for such things as network transaction processing and distributed databases are not expected to be fully functional until 1993 at the earliest.

These caveats should not, however, discourage potential OSI implementors. Most networks currently provide users with less robust services than their corresponding offerings within OSI. Obviously, with more room to grow, OSI shows greater potential for supporting the more intense network utilization planned - and unplanned - in the future.

DEFINITIONS

The Concept of Layering

In an attempt to deal with the constantly changing nature of standards and the products that employ them, the OSI model was based on layers. As a result of that approach, it is easier for vendors to implement the model into their products. Users, who inevitably find themselves continually upgrading their networks, will also benefit from the model's modularity and cost-effectiveness.

Layering also allows more flexible configurations with respect to not only topology but also higher performance hardware support for network services. By allocating specific network duties across each of the seven layers, users and vendors can properly balance the placement of network and end nodes.

Transmission Services: Layer 1

The OSI model is quite flexible regarding the types of transmission services it supports. Older standards such as RS-232 and V.35 are supported for use in longer distance or lower performance network environments. In the higher bandwidth ranges, OSI makes use of local-area network interface standards including IEEE's 802.3 (Ethernet), 802.5 (Token-Ring) and 802.4 (broadband) as well as the more newly adopted ANSI standard for fiber-optic LANs, the Fiber Distributed Data Interface. Work is also under way to allow such recently heralded telecommunications services as Integrated Services Digital Network to support OSI-based computer traffic.

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Because of its modularity, OSI can adapt to any new transmission technology. This allows users the comfort of designing computer networks and networked applications without worrying about the communications transport method. Users will be able to make these choices during implementation, just as they would when choosing between Ethernet or Token-Ring for a PC network. This eliminates the much less appealing alternative of having the vendor make these decisions during the product design and development process.

Networking Services: Layers 2, 3 and 4

Layers 2, 3 and 4 comprise the networking portions of the OSI model. They provide support for information delivery between both intermediate nodes and end nodes. An intermediate node is one which routes information in a way that allows source and destination nodes to conduct a conversation. For example, if Node A, the source node, was to transfer information through Node B in order to have it subsequently transferred to the destination, Node C, Node B would be an intermediate node because it provides a routing function for Nodes A and C.

Within the OSI model, Layer 2, or the Data Link Layer, is exercised in transferring data from Node A to Node B and then again from Node B to Node C. Routing functions take place at Layer 3, the Network Layer, which allows Node B to determine that this data transfer is actually destined for Node C. The actual source-to-destination conversation occurs at Layer 4, the Transport Layer. Node A's Transport talks directly to Node C's Transport.

This division of responsibility within OSI will allow network managers to customize OSI to the needs of their organizations. In many organizations, OSI will initially be used as a backbone network linked to local networks running non-OSI protocols. For example, Novell, Inc. will not suddenly abandon support of its proprietary Netware IPX protocol and the large installed base of IPX users simply because the OSI protocol stack becomes available. However, for better enterprisewide connectivity, these distinct PC LANs may use OSI routers to send information to other parts of the network. This would allow the OSI backbone to support other types of communications besides PC LAN exchanges.

X.25, initially specified in 1976 by the international standards body, the Consultative Committee for International Telephony and Telegraphy (CCITT), is the most widely used OSI standard in the area of networking services. It is supported through the use of private packet-switching equipment as well as through public value-added networks (VANs) such as Tymnet and Telenet.

Application Services: Layers 5, 6 and 7

These are the services most closely related to, and controlled by, end users and network applications. They are demand-driven, meaning that as users or applications need to use the network, these layers perform their appropriate duties. For example, say user 1 on Node A wanted to send a file to Node B. The file transfer application service on both Nodes A and B would be involved in a layer seven (application) conversation. Along with this conversation, layer six (presentation) processing would occur to ensure that, upon transfer, the file would be in the format appropriate for Node B. This would then allow Node B users access to the file from their own applications. Layer five (session) would involve itself in this process by coordinating resources at both ends of the transfer, acting as the mediator between the high-level application services and the networking services below.

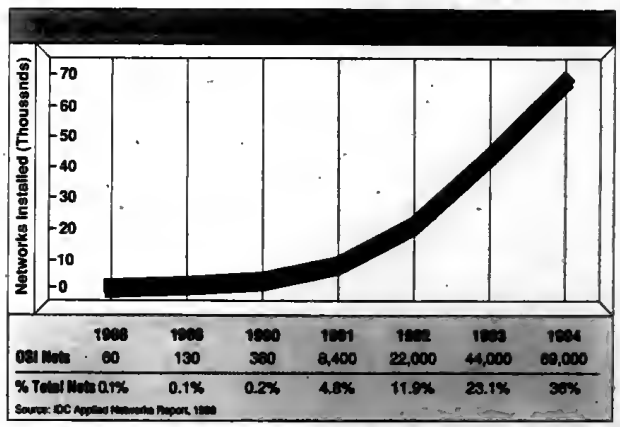
APPLICATIONS

Application suites are perhaps the most important, yet least defined, components of OSI. Designing company-specific applications for OSI networks will take IS managers quickly into uncharted waters. A number of them have been put forth.

Electronic Mail

Currently, most large organizations have installed multiple hardware platforms, which include mainframes, minicomputers, PC LANs, stand-alone PCs and other systems. Electronic mail has the potential to become the basis for common communications among these diverse computing environments. However, the reality of proprietary communications protocols, e.g., IBM's Systems Network Architecture (SNA), Digital Equipment Corp.'s Decnet and incompatible E-mail formats, such as addressing, directories and document types, make the development of a corporatewide mail system a difficult and resource-intensive challenge for IS planners. What large organizations require is a common, unifying set of specifications that allows E-mail users on one vendor's system to easily talk to other users on different systems across the corporate network.

The suite of international standard E-mail specifications is comprised of two protocols: X.400 and Office Document Architecture. X.400 enables the transfer of messages - packets of information - between users and applications. Initial work on the X.400 messaging standard has been entirely geared toward providing vendor-independent E-mail. The most important protocols within X.400 are Message Transfer Agents, which accept and transfer messages, and User Agents, which provide the E-mail interface between the end user and the mail-transfer system. X.400 can be used in several

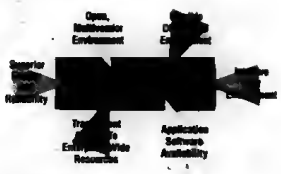


IDC predicts backbone networks based on mainframes and minicomputers will experience significant growth between 1990 and 1991. This growth will stem primarily from demand by the U.S. government and DEC offering its OSI stack to Decnet customers.

Move Your Wor
Isolation To

kgroups From Cooperation.

Most companies have computer systems that were acquired on a departmental level, often from different vendors. This practice has left islands of information—workgroups divided by function, operating system, and communications protocols—barriers more formidable than any wall.



As a result, information critical to the success of the entire enterprise may not be available on a timely basis to those who need it.

A primary goal of NCR's Open, Cooperative Computing strategy is to enable an open, multivendor environment that integrates these islands into a single enterprise-wide network. To accomplish this, we've developed a wide range of capabilities adaptable to almost any customer need.

We deliver open communications systems, network applications, and network management based on OSI standards, to help make your migration to a fully OSI-compliant network easier. And we provide current system flexibility with open communications standards like TCP/IP.

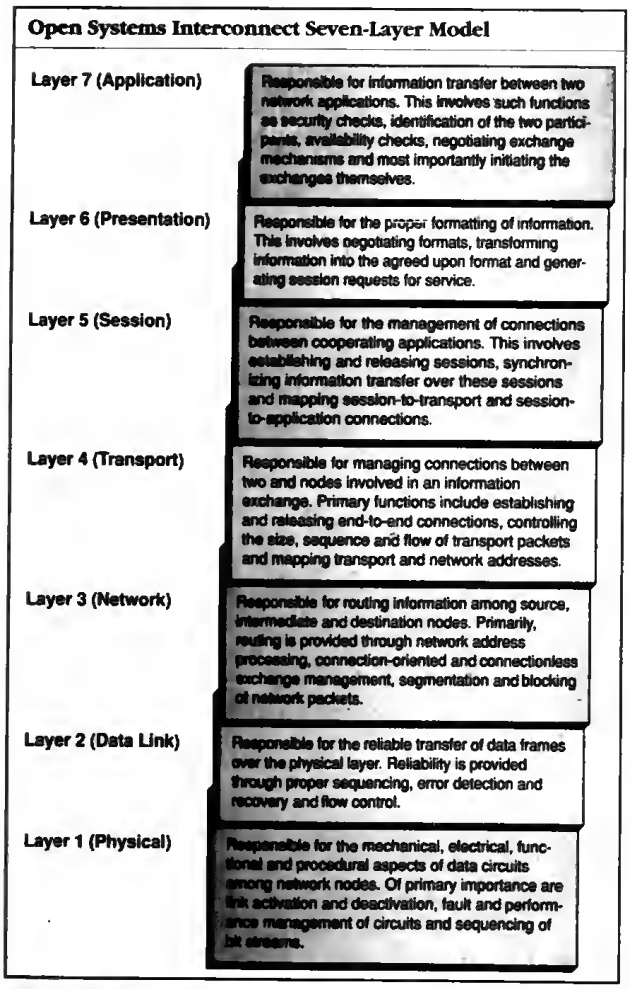
If you use SNA, NCR helps preserve your investment by a continuing commitment to superior SNA connectivity, while helping you integrate this proprietary standard with open systems.

We also support standard communication interfaces like Ethernet and Token Ring and standard operating systems like UNIX,™ OS/2,® and DOS.

Moving your workgroups from isolation to cooperation can make your organization more efficient, more competitive, a better team. For details, phone 1-800-CALL NCR.

NCR

Open, Cooperative Computing.
The Strategy For Managing Change.



different capacities by large organizations, including the following:

- As a common denominator between dissimilar internal mail systems. For example, X.400 could be used to transfer mail between DEC's All-In-1, IBM's Professional Office System and Wang Laboratories, Inc.'s Wang Office since each supports X.400.
- As a link for intercompany communications. X.400 can extend the reach of a proprietary internal mail system to public or other private mail systems that support X.400.
- As a link to international offices. Because of the wide support for OSI in Europe, X.400 will help extend U.S. mail systems to offices in Europe.

X.400 has been ratified as an international standard, and a new 1988 version was recently approved by the CCITT. This newer version includes support for the delivery of multiple information streams, including data, electronic data interchange (EDI) documents, image, facsimile, voice and even audio. Obviously, X.400 is destined to become far more than just an E-mail delivery system.

Office Document Architecture is the specification for revisable compound document interchange. Compound documents contain text, data, image, graphics and voice. Office Document Architecture builds on X.400's ability to act as an envelope, defining how data is sent between two users by interpreting that information.

It is a finalized international standard, but it only contains specifications for text plus limited graphic and image capabilities. It will have to be substantially enhanced to fully manage the transfer of complete compound documents before realizing its potential. Several vendors have announced plans to utilize Office Document Architecture as a basis for their compound document architectures, but IDC believes it will not receive widespread support until 1992 at the earliest.

File Transfer Access Management (FTAM)

The FTAM protocol was designed for the exchange of files among computers and users on an OSI network. Much of the work on the protocol was derived from the manufacturing environment in which the management and proper exchange of parts and inventory information became critical as companies began applying just-in-time manufacturing techniques.

General Motors Corp. not only led the Manufacturing Automation Protocol (MAP) effort in its early years but also began requiring FTAM transfer capabilities from its suppliers. Because of its acceptance as part of the MAP effort and its early adoption date, this protocol has been widely implemented by computer vendors. It is second only to X.400 in vendor product availability at the application level.

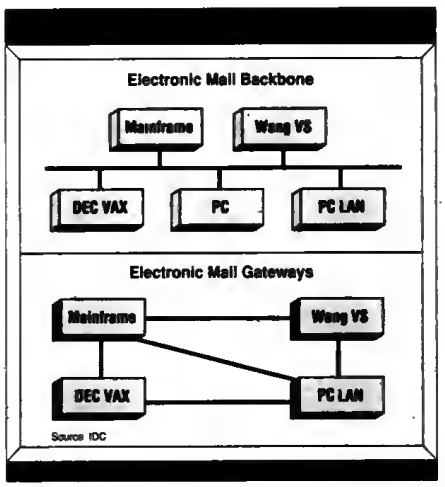
However, MAP has not achieved the same level of success as X.400 in gaining widespread user acceptance. There are a variety of reasons for this. First, while X.400 can be easily shown to solve a common problem - incompatible E-mail - FTAM requires more creativity in terms of application development. Second, users have had other options for transferring files among computers. Some, such as remote job entry emulators, are indeed old, while others, such as tape and flat text files, are simplistic, but they have gotten the job done.

Electronic Data Interchange

EDI is defined as the electronic transfer of structured data via standard messaging protocols. The most common use of EDI is the transmission of general business documents such as purchase orders or invoices between business partners. Another important EDI application is electronic funds transfer between financial institutions. EDI is an ideal application on top of OSI because OSI networks can give organizations the universal connectivity over standard communications protocols that EDI requires.

EDI also describes how the information or business document is formatted. Several EDI standards currently exist. The two internationally accepted EDI platform standards are ANSI's X.12 and EDIFACT. Platform standards act as an underlying base for application-specific, value-added communications. X.12 is developing as the preferred U.S. EDI method, while EDIFACT is the choice for international exchanges.

Other standards developed by industry organizations such as the Transportation Data Coordinating Committee will eventually migrate to X.12 and EDIFACT, using them as platforms while enhancing them with industry-specific extensions. Today, most EDI traffic is carried over proprietary network protocols. However, industry pilots are moving toward utilizing X.400 as the standard messaging and forwarding mechanism of EDI.



The use of a common backbone provides centralized gateways for the connection of incompatible E-mail networks

Directory Services

A collaborative effort by the CCITT and the ISO, X.500 is a set of specifications that maps out the structure of a global electronic directory. The X.500 standard specifies the structure of the directory, the types of information (objects) to be stored, how entries are to be named, the manner in which the information will be accessed by users and the types of services that will be available to users. X.500 is designed to work as an extension to X.400 electronic messaging. X.400 provides user-friendly names for its standard message envelope, while X.500 provides the services to translate user names to network addresses.

X.500 will first be available from vendors during 1990. Installation of large X.400/OSI networks will drive developments in X.500. Experimental X.500 directory usage will begin in 1991, but most large organizations will not actually implement complex X.500-directed networks until 1993.

Initially, X.500 will exist as a number of isolated directories. Individual networks will utilize one or more X.500 distributed systems architectures (DSA) to provide services to intraorganizational network users. Over time, the DSAs in each network will be connected. The result will be an ever-expanding web of X.500 directories. The Directory is the name given to what will be the ultimate realization of worldwide directory services sometime in the late 1990s.

Distributed Databases

Considering that much of today's IS budgets is spent on the development, manipulation and maintenance of information databases, OSI standards for Remote Database Access will have a great impact on expenditures in this critical area. Unfortunately, user apprehension and these lagging standards constrain the development of mission-critical access to data. This is both a reflection of their complexity and of user ambivalence toward changing what is a very complex and critical part of their IS structure. As PC LAN databases, SQL servers and object-oriented systems grow in popularity, there will be an increasing demand for standardization.

INTEGRATED NETWORK MANAGEMENT

OSI Network Management Status

Comprehensive standards for network management, although having made much progress over the last few years, are still two years away from finalization, and fully conforming products are two years beyond that. Does this mean that users should hold off on implementing OSI networks until 1994? IDC believes the answer is absolutely not.

Because proposed OSI network management systems are not considered sufficiently robust, proprietary network management systems will continue to outperform OSI-based network management systems well into the foreseeable future. However, OSI network management standards are key in the realm of intra-network and intervendor network management exchanges. Here, OSI standards will outline rules for network management interactions, enabling coordinated network management without having to specify every last detail of proper network operation within any one segment of a network.

The most influential group involved with OSI network management is the OSI Network Management Forum. Comprised of almost every major vendor of computing and communications systems, this group's charter calls for it to oversee the interoperability of OSI-based network management systems. This task is no easy one. With the risk of losing users running high, vendors are delicately balancing control against open-mindedness. Too much of the former and vendors risk user loyalty; too much of the latter and they risk user reliance.

MIGRATION STRATEGIES

Most IS/communications managers in large U.S. organizations are interested in what OSI may offer them but they are very unclear on what those benefits are and how to achieve them. IDC survey data shows some movement toward OSI in IS plans. Generally, a conservative approach is dictated through 1990 and 1991, with a quickening pace for implementation beyond 1992.

Beyond 1995, OSI will be well on its way to dominating large corporate networks. X.400 especially has the potential to lead OSI into many large organizations. Even implemented without full OSI stack support, as it

Configuration	• Initialize and reinitialize network entities. • Collect and store information about all circuits, hardware and software systems within the network. • Distribute network information and systems and application software.
Fault	• Identify, classify and report problems. • Analyze network breakdowns. • Provide a resolution by directing operators and/or initiating intelligent automatic restorals.
Performance	• Monitor use of the network; plan for the aquisition and deployment of new equipment and services. • Tune network and application components.
Security	• Track information flow within the network nodes and applications. • Identify and pinpoint sources of misuse or abuse of network resources.
Accounting	• Provide for chargeback of network access and level of utilization. • Aid in properly managing networking budgets. • Quantify productivity associated with installed and planned network technologies

can be, X.400 will stimulate demand for more complete lower level and comparable application-level services.

Implications for Other Networking Standards

OSI, although coordinating with a wide variety of technologies at the transmission-service level, serves as a replacement for almost every network architecture currently in use. SNA, Decnet, Data General Corp.'s Xodiac, Hewlett-Packard Co.'s Advancenet NCR Corp.'s TowerNet and others all face the probability of replacement by corresponding functions specified within the OSI model. Obviously the key for these vendors and their users will be effectively moving their current proprietary schemes toward an open architecture.

The cynics among us would say that vendors will never do this. The past history of heel dragging relative to standards implementation supports this claim. However, as users have grown more powerful and as standards such as Unix, SQL, MS-DOS, Ethernet and Token-Ring have grown more widely used and appreciated, the dynamics of the situation have changed. In this environment, the vendors are being forced into delivering open systems platforms at the networking layer, in addition to operating systems, databases, user interfaces and programming tools.

Replacement of and Coexistence with Proprietary Networks

The greatest challenge for users implementing OSI networks during the next few years is the proper balancing of openness against cost and performance. Proprietary networks enjoy the leverage of a substantial installed base and years of enhancements. Fortunately for most computer vendors, network architectures have been mainly implemented in software with a certain amount of hardware assist where performance became a concern. This software orientation provides the user with a smooth upgrade path to the OSI model.

For example, DEC, by upgrading its proprietary Decnet Phase IV transport protocol to OSI Transport within Decnet/OSI Phase V, provides, in essence, a free migration to those users with up-to-date maintenance contracts. Once implemented, this new open DEC transport holds the potential of opening up the user's network to OSI-based NCR, DG, Bull, H. N. Information Systems, Inc., Unisys Corp. and even IBM equipment.

Many alternatives will be offered to users over the next two years. Routers and gateways that act as go-betweens for OSI and proprietary networks will become prevalent as OSI backbones are implemented. Although possibly more resource intensive, a dual-stack approach, i.e., an architecture that offers both OSI and proprietary protocol usage side by side, will allow smoother migration for those more complex and diverse network configurations. A third alternative will have OSI protocols providing support for both OSI and proprietary applications and extensions. This alternative is the one that will eventually prove itself most useful for both vendors and users.

SNA/OSI Coexistence

The largest population of applications and users exists within IBM networks utilizing either Binary Synchronous Communications or SNA protocols. Therefore, the biggest potential migration toward OSI from a proprietary system exists within IBM's domain. The key to unlocking this potential from the current constraints of hardware and software dependencies is IBM's Systems Application Architecture (SAA) and its support for the OSI model. Scheduled for release this spring and summer on 370 architecture machines, IBM's SAA-based OSI suite will offer IBM users a break from traditional hierarchical IBM network offerings. Both OSI and SNA occupy the common communications portion of SAA, allowing users the freedom to choose between IBM-proprietary and open standards as a basis for new applications and end-user devices.

This increased IBM flexibility toward networking will lead to a more open IBM environment for users - one that will more easily allow the integration of other vendors' equipment and services. No matter how LU6.2 and PU2.1 have been sold over the past few years, the implementation of the OSI model within SAA represents the first solid move by IBM toward bringing peer-level communications capabilities into its strategic, mainstream product offerings.

The Move away from TCP/IP

Over the next few years, networks that utilize Transmission Control Protocol/Internet Protocol (TCP/IP) must be prepared for a transition to the more highly functional and longer term OSI solution. Useful in that preparation will be TCP/IP-OSI routers, and gateways such as IP-to-OSI network exchanges; well-integrated application and networking services from both architectures, e.g. using File Transfer Protocol over OSI lower layers, and most importantly, painless upgrades from TCP/IP to OSI protocols.

STANDARDIZING THE STANDARD

Multivendor Interoperability

Conformance testing is critical to OSI acceptance. The tremendous benefits of OSI can only be achieved if OSI products

from a multitude of different vendors can plug and play for users. Over the course of the last two years, several standards promotion groups, specifically the Corporation for Open Systems in the U.S. and the Standards Promotion and Application Group in Europe, have developed test suites for seven-layer OSI testing. Through these test suites and at trade show demonstrations around the world, vendors have shown that multivendor OSI networking can be achieved. Testing and initial user experience have also shown that no two vendors implement OSI the same way. Users are advised to implement multivendor OSI networks only with caution and, for at least the next two years, with the expectation of expending significant time and effort. Over time, testing and experience will increase interoperability, but the goal of OSI plug and play is unlikely to be reached before the mid-1990s.

PRESENT AND FUTURE UTILIZATION

Current Usage

Current OSI utilization is best exemplified by the world's VANs. They represent many distinct operating transport networks utilizing one common standard, X.25. They offer applications services such as EDI and E-mail for intra- and intercompany communications internationally. This is accomplished in an environment that uses a mix of private and public communications and computing equipment as well as a multiplicity of service providers. Although far from perfect, VANs represent the current state of the art in large-scale OSI networking.

Within the private networking arena, full process manufacturing companies have shown the highest degree of OSI commitment. With their specialized research and development, automated manufacturing operations and well-integrated selling, administrative and service functions, they have the most urgent need for highly coordinated computing systems. Increasingly, the financial services industry has gravitated toward the use of standardized networks based on the OSI model. Its demands for higher performance intelligent workstations and networks, its need for smooth and timely international exchanges and its strong desire for vendor independence are combining to drive this industry down the OSI path.

The U.S. government, through its Government OSI Profile (Gosip) which is set for implementation this year, will be a big boost for OSI networks in the early '90s.

Future Directions

There will be two phases of OSI development. The first will be aimed at broadening the availability and use of the base-level OSI as a flexible and multivendor network system. Conformance testing and migration strategies are pivotal in this phase. The second phase will be aimed at strengthening OSI itself. In this phase, further enhancements to OSI applications and increasingly higher performance protocol stacks will become the driving forces.

Phase one will take place over the next three years. In 1989, we saw many OSI announcements and a few product introductions. This year will be the year in which almost every major vendor makes available its OSI stacks and applications. The years 1991 through 1993 will be dedicated to making sure the products of 1990 are actually able to work together within one common network.

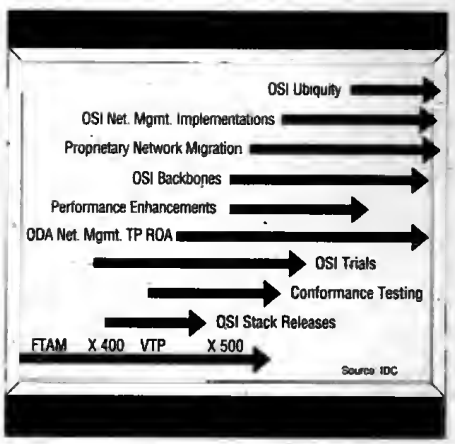
Simple OSI-based organizationwide applications such as E-mail and file transfer will become widely utilized by the end of 1993. OSI backbones, acting as coordinators for installed proprietary networks, will start to be implemented within larger organizations in this same time frame, continuing through the year 1995.

The second, more performance-oriented phase of OSI will begin in the technical/knowledge worker community - the current bastion of TCP/IP, UNIX and high-powered workstations. Its requirements for intense, real-time network delivery mechanisms combined with its leading-edge networked applications will drive OSI developments starting in 1992. These phase two developments will be restricted to this select community of users until OSI proves itself a viable and workable backbone technology. Beyond 1994, performance enhancements will begin disseminating into the mainstream end-user community. At this time, demanding applications such as object-oriented databases and image processing will become the norm rather than the rarity in IS.

Time Line for Adoption

End-user organizations that abide by the "right processor for the right job" philosophy should already have firm plans in place for OSI utilization. IDC believes actual implementation for these more aggressive organizations will begin in 1991. More mainstream organizations that tend to operate rather distinct multivendor environments - NCR point of service, DEC engineering, IBM administrative, HP manufacturing - should already be planning the coordination of their networks into a unified OSI backbone. Implementation in these organizations should happen between 1993 and 1995. Further migration of these distinct networks toward OSI stacks and applications will occur between 1994 and 1996.

Organizations primarily oriented toward a single network architecture such as SNA and a minimal investment in what would be considered secondary vendors will gain little from OSI until the enhanced second phase beyond 1994. At that point, OSI networks will begin to offer significantly superior functionality when compared with traditional proprietary networks. By sticking with the older networking methods, organizations will invariably fall behind in their ability to compete on the basis of information technology.



OSI charts a steady course toward ubiquity.

The Architecture Behind the Strategy.

Open, Cooperative Computing Architecture.

NCR's Open, Cooperative Computing Architecture (OCCA) focuses on client-server relationships as the foundation for Open, Cooperative Computing.

In the client-server model, the application is split between the client and server, and data is separated from the applications. This makes maintenance of applications and data easier, and allows processing at the most effective location.

Because clients and servers are separate components that work together, servers can be located anywhere in your enterprise. The size of both clients and servers can be scaled from small to very large, so you can base decisions on organizational needs, not technical restrictions.

Compute-intensive human interface functions are performed at the client level, allowing more economical processing of workstation-level applications, and providing a more powerful human interface.

The server processes often-used and specialized applications like database management and network security, and handles compute-intensive data management and I/O intensive data retrieval and processing, providing only the information the client requests. This greatly reduces network traffic and communications costs, while improving response times.

OCCA also supports such services as exchange of electronic mail and files, and through a common set of programming interface standards, offers a universal application environment for development and run-time systems. And by supporting a uniform set of human interface services, it allows OCCA developers to provide new applications that are easier for you and your staff to learn.

Open Systems Networking.

NCR's plan for open networking is designed to give you the flexibility you need by delivering standards-based systems for all levels of your organization, and the end-to-end support and service to achieve *your* strategic plan.

To ensure our customers of multivendor connectivity and interoperability, we've developed a wide range of solutions adaptable to almost any customer need.

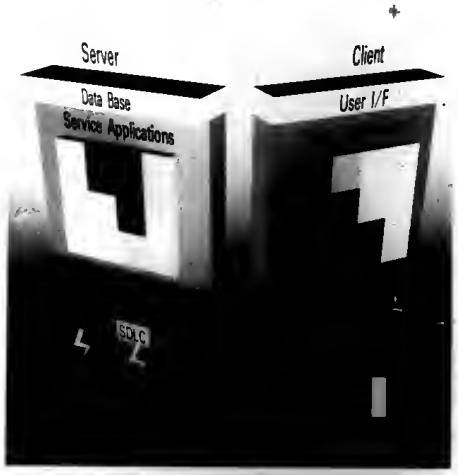
For example, NCR delivers open communications systems, network applications, and network management based on OSI standards, to help make your migration to a fully OSI-compliant network more manageable. And we provide current system flexibility with open communications standards such as X.25 and TCP/IP.

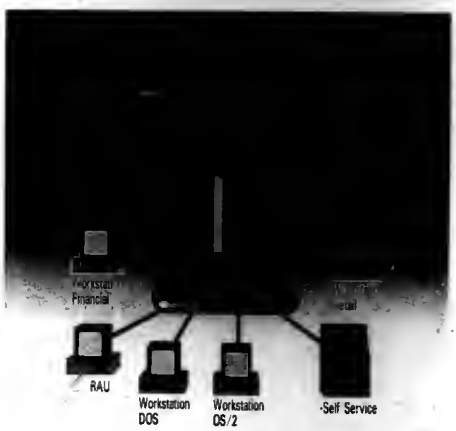
If you use SNA, NCR helps to preserve your investment through a continuing commitment to superior SNA connectivity, while simultaneously helping you integrate this proprietary standard with open systems.

We also support standard communication networks, and standard operating systems like UNIX,® OS/2® and DOS.

NCR's strategy for Open, Cooperative Computing is to give you the flexibility you need to compete, and win, in the '90s. And we support this strategy with the architecture and service necessary to offer not just systems, but solutions.

For more information on Open, Cooperative Computing, phone 1-800-CALL NCR.





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Open, Cooperative Computing.
The Strategy For Managing Change.

MC-1103

MANAGER'S JOURNAL

EXECUTIVE TRACK

Donald E. Rife has been promoted to director of computer services at the **Medical Center of Delaware**, a private, nonprofit hospital in New Castle, Del., that is the 16th largest health care facility in the U.S.

Rife, 36, joined the medical center in May 1988 as manager of technical support. Prior to that, he was a technical business consultant at Computer Task Group, Inc.

Rife's 13-year information systems career has included positions as systems engineer at IBM, manager of technical services at Villanova University and manager of hardware and software at Crystal Brands, Inc. He has also worked as an independent consultant. He holds a certificate in data processing.

Harry Toland has been promoted to vice-president of IS at **Market Street Mortgage Co.**, a Tampa, Fla.-based retail mortgage banking company. Toland joined Market Street Mortgage in 1989 as director of IS.

Toland, who will oversee the planning and installation of a new generation of communications and information programs at Market Street Mortgage, will continue to supervise the existing IS network.

Prior to Market Street Mortgage, Toland worked in several IS positions during a 10-year career at United Technologies Corp. He also has experience in international banking and sales at RCA, Exxon Corp. and Olivetti U.S.A.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Founding father of Japanese IS

With little to guide him, Noburo Minamisawa helped lead Japan to the computer age

BY YASUKO YOSHIMI
SPECIAL TO CW

With clear vision and a strong faith in computer and networking technology going back almost 40 years, Noburo Minamisawa is a living witness to and pioneer from the dawn of Japan's computing era.

The 72-year-old adviser at Japan's Onoda Cement Co. has helped develop information systems for hundreds of Japanese organizations — notably the Japan Railway — while working as the IS manager at Onoda Cement.

His contributions to IS in Japan extend into government agencies, banking and manufacturing industries, but they all started with Onoda Cement's internally developed corporatewide computer network, which Minamisawa designed from scratch in 1953.

Prizewinner

In recognition of his distinguished service, he has been awarded prizes from the minister of Posts and Telecommunications in 1975 and from the prime minister in 1983.

"I did not join the company to pursue an MIS career," says Minamisawa, who shows surprising vitality for his age.

Now in his 40th year at Tokyo-based Onoda Cement, he serves as adviser and executive director at OACS Co., a spinoff company of Onoda's IS division and NTT Internet.

An IS utility joint venture with a large vendor such as NTT is fairly common business practice in Japan. Onoda Cement is the 11th largest building materials manufacturer in the world — the second largest in Japan — with revenue of $3.1 billion.

In addition, Minamisawa holds chief director positions at the Japan Computer Utility Association and the Japan Data Processing Association. Until recently, he was a professor at several colleges teaching principles of economics and IS.

One of his first big IS efforts was the Japan Railway's "Midori no Madoguchi," a nationwide ticket reservation center that linked 3,000 point-of-sale terminals at 1,600 stations. This was the first on-line, real-time system launched in Japan.

Called the MARS (Magnetic Automated Reservation System), the system began full-fledged operation in

Continued on page 70

PROFILE: Noburo Minamisawa

Eiji Miyawaki

Position: *IS manager, Onoda Cement Co.*
Achievements: *Designed Onoda Cement's corporatewide computer network in 1953; designed Japan Railway reservation system; honored by Japan's Prime Minister.*

Teenage techie is serious about his GAME

BY GARY H. ANTHES
CW STAFF

Tenth-grader John Haskins, the youngest member of the winning team in the Black Data Processing Associates' recent National Student Computer Competition, began programming at the age of six, and he's now developing his own graphics-animation programming language.

Called GAME (Graphic Animation Modulation Engine), it will support testing of animation sequences and dual-graphic editing and have the ability to merge graphics and text. In other words, it will help Haskins develop video games like the one he made recently — "a Mutant Ninja Turtle game ... robots fighting for their master."

Not all is fanciful for Haskins, a student at Dunbar Senior High School, an inner-city school in Washington, D.C. He said he enjoys trigonometry, integral calculus and programming for applications in artificial intelligence.

"The things I take seriously are my math, my Turbo Prolog class and GAME," he said.

Haskins said he will study math or computers in college. Why math? "Math is very predictable. One plus one is always two, but with English you have things like, 'i before e except after c,' " he said.

Haskins and his team trained all summer for the national computer competition, meeting twice a week with a coach for drilling in computer technology and practicing sample problems (see story page 71).

When not in school or training for the contest, Haskins worked with several other students on a project sponsored by Joint Educational Facilities, Inc. (JEF) to develop the Artificial Intelligence Model of the Black Teenager. The knowledge-based expert system embodies the views of black teenagers on matters of sex, drugs, suicide, education and family life. JEF founder Jesse L. Bemley said he hopes the teenagers can turn the model into a commercial product.

Haskins said he does most of his programming in Pascal, which he learned in a class, and C, which he picked up on his own. "I just read a lot of books on C. It came pretty easy.

"My hobbies are playing basketball, playing video games, making video games and counting my money," Haskins said. The money is for a new computer.

Minamisawa

FROM PAGE 69

1964, the year that Tokyo hosted the summer Olympic Games. The mild-mannered Minamisawa's salary-man life at Onoda Cement began in 1950 in the accounting division. He joined the company initially to make the best of his economics major.

For 10 years before that, after graduating from a commercial high school, he managed his father's handbag business. "I was predestined to do so, due to being the oldest son in the family," Minamisawa says. It is still typical for a Japanese son to take over a family business.

During that time, however, Minamisawa prowled around his native town making a sincere effort to pass entrance exams to study mechanics at Shinshu University and economics at the prestigious University of Tokyo.

"I had books sneaked in between handbags. I was scolded when studying at the desk," Minamisawa recalls. Shigemi Oshima, general manager of the IS division at OACS, says that Minamisawa reminds him of Ninomiya Kinjiro, a legendary Japanese 'dutiful son' whose statue is seen in front of elementary schools throughout the country.

> "I STUDIED AS hard as I could, though I had no knowledge about the use of computers."
>
> NOBURO MINAMISAWA
> ONODA CEMENT CO.

After successfully completing college, Minamisawa began a typical Japanese employee "rotation," working in the accounting, materials and finance departments at Onoda. He was then assigned to the Research and Planning Division, where he was responsible for preparing management census and research reports to present at board of directors meetings.

Minamisawa's reports were full of multicolored graphs and charts made by using the new copier and camera technologies of the time. Toyoroku Ando, Onoda's president at the time, was enchanted with his reports and assigned Minamisawa to conduct a feasibility study on computerization.

He recalls Ando saying, "I understand it is unusual to work on computers in a cement production company, but can you try?" Minamisawa embraced the offer "because I was young," he says.

"Since it was mandatory, I studied as hard as I could, though I had no knowledge about the use of computers or applications of computer technology," he recalls with a smile.

Ando told Minamisawa that he had seen a picture of the Univac I in a Japanese photography magazine with a caption claiming it as the world's first mainframe for practical use. The magazine explained the number cruncher's use in the U.S. census and said it was becoming popular in the world of U.S. business.

"Ando-san had determined the need for office automation and modernization. He was anxious to install factory floor systems, or what would now be called [computer-integrated manufacturing]."

In order to link the company's 32 branches, which were spread out from the northern island of Hokkaido to the southern island of Okinawa, Minamisawa mapped out a networking structure by himself. "I had no staff working with me. A couple of years later, two employees were assigned to help me," he says. He connected 130 terminals with Onoda's Univac File Computer via private telecommunications lines.

In 1957, he published a book titled *Keiei no Automation (Automation in Management)*, which introduced his ideas of "comprehensive computerization, managerial decision-making and integrated processing methods." He acknowledges that automating the enterprise was ahead of its time.

"No scholars and researchers I consulted with inside or outside the company could understand why we should take the trouble to send payroll information, for example, from a Kyushu office

to Tokyo and back again. They said it's odd," Minamisawa says. "I explained an electric wave can run around the globe seven times in a second, and such data transfer wouldn't take a second."

In order to implement his plan, he went to talk with Teiji Tanimura, then president of Shinko Seisaku Sho, a printer manufacturer. The firm then developed the Standard Onoda Auto-Punch Typer, a remote-control I/O encoding terminal based on specs designed by Minamisawa.

He even created a Japanese word for it — 'enkaku chohsetsu nyu-shutsu-ryoku sohchi.' No manufacturers have yet developed terminals, although they are one of the three columns indispensable in building a corporatewide computer network system besides mainframe and data transfer equipment.

"He began a tradition in the IS division. The idea is to create and customize something if it is not available off the shelf," says Junichi Uchida, managing director at OACS and one of Minamisawa's first apprentices at Onoda Cement.

In April 1959, when the Univac File Computer was installed at Onoda Cement, it was the first full-fledged number cruncher operated in the Japanese private sector.

"It's hard to believe, but it took three years from the time we ordered it," Minamisawa recalls. The first mainframe in the public sector in Japan was the IBM 704 EDPM, which began operating at the Meteorological Agency in the same year.

Minamisawa's efforts within Onoda became a signpost to help open Japan's computing era. "Ando-san told me to help develop information systems for the sake of economic development in this country," he says.

Yoshimi is a freelance writer based in Tokyo.

D.C. takes computer tourney

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Five teenagers from Washington, D.C., public schools beat 16 other teams in the fifth annual National Student Computer Competition, held at the annual convention of the Black Data Processing Associates (BDPA).

The teams, which had trained all summer, competed by solving a problem that required analysis, programming in Basic, documentation and an oral presentation, all in the space of two hours. Separately, the teams had to answer questions about computer technology and the history of the BDPA.

For this year's problem, the winners wrote a program in Basic to analyze survey forms, determining such things as the mean income of families in a neighborhood and calculating various statistics such as the percentage of low-income families. Judges evaluated the teenagers' ability to explain and demonstrate the problem and its solution, the ability to answer questions and the program's sophistication in design, readability and report generation.

Prizewinners

Winners John Haskins, Carletha Rhones, Taylora O'Bryant, Lewis Newton and Christopher Mitchell will each receive $1,000 scholarships. Second-place winners, sponsored by the Chicago BDPA chapter, will receive $500 scholarships.

Team coach William Johnson, who had led two previous Washington, D.C., teams, said this one was the weakest in terms of experience. "But they pulled all-nighters studying. They just decided they wanted to win. I'm particularly proud of all of them," he said.

Perry W. Carter, the BDPA 1990 conference chairman, said he hopes BDPA can move toward collegiate-level contests. He will look for corporate sponsors with real problems who could get genuinely useful ideas from the contestants' approaches, he said.

CLIPS

Tim Lewis

Summaries from leading scientific and management journals

"The RFR: Winning the race of technology"

By Matthew Buckman

The Journal of Systems Management
September 1990

■ Requests for proposals, or RFPs, are outdated. These 100-page tomes, written by consultants and delineating such specifics as screen length, don't deal with whether any one solution meets a company's *business* needs.

The decision-making process needs to shift from one of buying cheaply to buying smartly. What information systems management needs is a request for recommendation. An RFR — which focuses on the company's needs, not system needs — requires the following criteria:

- Replies should be limited to 10 pages.
- A price to the closest $50,000 is required; if it's a small project, make it 5% to 10% of the estimated cost.
- The vendor's recommendation must include a brief systems description and details on the support the vendor can offer. It must include a list of references.
- IS management should provide the vendor with a brief description of the firm's needs.
- A due date of three or four weeks' time should be included.

With an RFR, companies can save the $50,000 to $100,000 consultants typically charge to advise them on a 100- to 200-user system.

"Aligning CIM strategies to different markets"

By Jeffrey R. Williams and Robert S. Novack

Journal of Long Range Planning
February 1990

■ Successful computer-integrated manufacturing (CIM) strategies are shaped by competitive forces beyond the shop floor, including such industry variables as costs, volume, customer wants, monopolies and stability. CIM requires managers to have a tightly focused view of how their company intends to compete.

For example, manufacturers in a rapidly changing market, characterized by short product life cycles, need to plan for the obsolescence of not only their products but of their manufacturing processes.

To reap the full benefits of CIM, companies must completely integrate the manufacturing mission with their strategic business mission — indeed, the distinction nearly disappears.

Rather than producing fast competitive results, CIM investments tend to have longer-term paybacks that in some cases approach a "bet-your-company" status.

"The neural computer"

By Herb Brody

Technology Review
August/September 1990

■ Neural networks, according to biologists, bear only a superficial likeness to the brain, yet despite this, they are being groomed for tasks that conventional computers are not equipped to handle.

Constructed of simple electronic "neurons," neural networks add together many input values and perform mathematical operations on this information to give a single output, usually all at once.

Tasks within their capabilities often involve picking out patterns. For example, to train the computer to analyze handwriting, it must be shown thousands of handwritten letters in a variety of styles. Each time, it must be told what the sample should be, eventually learning to recognize the letters on its own.

There are many areas waiting to benefit from a technology that has the ability to learn and adapt from its mistakes, among them speech recognition and telecommunications.

Organizations that have already seen the advantages of neural networks include the U.S. Postal Service, which hopes to enlist the machines in reading and sorting handwritten ZIP codes; airports, which hope to use them to screen for plastic explosives in luggage; and banks, which hope to have them evaluate mortgage loan risks.

Financial organizations such as American Express Co. and Chase Manhattan Bank N.A. have developed neural networks to help them spot patterns in financial data.

The Chase system was designed to cut the enormous cost of stolen credit cards. Chase programmed the system with data on credit-card transactions, indicating ones that turned out to be fraudulent. The neural network found certain trends; for example, it discovered that transactions most likely to be questionable involved the purchase of women's shoes for $40 to $80.

INTEGRATION STRATEGIES

When integration means insecurity

BY JON WILLIAM TOIGO and JOSEPH MAGLITTA

Are integrated systems more vulnerable to security threats? A growing number of computer security experts think so.

Take the following typical scenario, offered by Mike Heylin, an analyst at Creative Strategies Research in Santa Clara, Calif.: "A remote office gets tired of waiting for information through Federal Express, so they go to a local PC retailer and get set up. IS provides a connection directly into the corporate mainframe."

The problem, Heylin says, is that the information systems department may be accustomed to serving local users only. The new branch users are likely to be quite unsophisticated about security issues. The result, he says, is that security for the new remote office "may not be foremost in everyone's minds."

Sound familiar? Many computer security experts say that the trend toward increased systems integration and the rise in computer crime are on a collision course — especially in small and medium-size companies that may lack sophisticated information security.

Factor in corporate downsizing, they say, and the picture worsens.

"Downsizing and integration are occurring at a time when there is a major increase in computer crime incidents in the U.S. and internationally," says Sanford Sherizen, president of Data Security Systems, a computer security firm in Natick, Mass. "At a time when there should be a tightening up of security, we are seeing a diminution of security."

Robert Campbell, president of Advanced Information Management in Woodbridge, Va., agrees that integration has complicated security.: "We spend a lot of time counseling customers about the hidden network: logical gateways and pathways that evolve because of end-user computing, integrated computing, etc. Most companies don't know where they are or that they exist and consequently have a large exposure."

Larry Ashton

The issue becomes particularly serious, experts contend, because with more of a company's information assets on-line, an intruder can do more damage than in a compartmentalized system. They fear that networks make companies much more appealing targets for hackers or viruses.

Security consultants say there are several reasons why integration poses particular problems.

The biggest reason probably has to do with how companies install integrated systems in the first place, Campbell says. "Historically, we work on integrating the systems now and worry about security later," he says. "That needs to change."

Once systems are in place, Heylin adds, problems arise in the way that many companies operate them. "Most distributed systems are implemented and managed by a non-DP person," he notes. As a result, security consciousness tends to be low.

Many companies have been slow to pick up on the problem because security in an integrated environment requires a whole new mind-set. "Traditional system security called for you to put road guards at access points," Campbell explains. "In

Continued on page 82

Meet me at the Hilton

Hotel chain's new integrated marketing system makes meeting sales as easy as room service

INTEGRATING THE ORGANIZATION

Hilton Hotels Corp.

BY JANET MASON

John DePaul, director of sales at Hilton Hotels Corp., sits in the lounge of the Waldorf Astoria in New York with a client interested in booking a Hilton hotel for a meeting. Over tinkling ice cubes and a background of soft music, DePaul anticipates the client's questions and tells him about the hotel's strict security and ample parking facilities — the two most important hotel features for the client's upcoming meetings.

On the surface, it's a successful high-touch, low-tech meeting. But the scene depends on a new, highly integrated sales and marketing system that has taken Hilton four years and some $5 million to develop.

Before the meeting, DePaul scanned the client's file on Hilton's Answer Net system, which gave him client information from national sales offices and local accounts. He reviewed the client's five-year history with Hilton in 10 minutes and left for the meeting, knowing in advance the kind of service the client desired.

After shaking the client's hand and leaving the lounge, DePaul heads not back to his national sales office but straight upstairs to the hotel's sales office. Using a sales representative's personal computer, he sends one message to Hilton sites on the East and West coasts and Hawaii — locations that the client is considering for meetings during the next year.

DePaul leaves the Waldorf Astoria confident that Hilton salespeople in local hotels have already received his message and that — with the system's automatic report on leads — he will know of their progress within several days.

This type of expediency was impossible for Hilton — which calls itself "America's business address" — until Answer Net was completed in June. The networked system connects local, regional and national sales offices in 63 Hilton hotels and sales offices. Hilton has plans to sell Answer Net to its 235 U.S. franchises in the near future.

Alan Levenson

Hilton's Wichers: *'In sales, speed wins'*

In the past, Hilton hotels operated as separate entities, explains Chris Wichers, project leader. The result, he says, was that "the customer would have to wait a week for information" about availability at other Hilton sites.

"Now," Wichers says proudly, "when a national salesperson talks to a customer and gets 10 meetings, 10 sets of dates and 10 locations and has two days to get the information, he can do it through Answer Net's electronic mail and lead report generation."

That's good news for Hilton. The $998 million chain, headquartered in Beverly Hills, Calif., derives nearly half of its business from meetings and corporate travel. Each year, Hilton hosts about 40 million guests.

In 1986, Hilton re-examined its sales and marketing system and

Continued on page 74

Continued from page 73

found it lacking. That was bad news, because the hotel market at the time had a flood of new competitors. Worse, liberal tax legislation allowed any business to shelter its assets in hotel property.

The computing picture was equally grim. In place was a 10-year-old system employing hard-to-use dumb terminals in each hotel to send and receive cryptic messages from the national and regional sales offices. Local sales representatives got messages late — or not at all. And sales managers who sent leads had no way of ensuring local sales follow-up.

Starting with two New York hotels in July 1987 and one Beverly Hills location, Hilton finished rolling out the system in 62 sites this summer.

One of the major hurdles in developing Answer Net was transferring the old database into the new system and running both systems at the same time, says Elizabeth Burkhardt, director of sales management systems at Hilton's Dallas office.

While both systems resided on the same IBM 3090, the older one was written in a customized program Hilton had used during the 1970s, and Answer Net was developed in IDMS.

The solution was to transfer the old system to a new database and develop custom software that would transfer data both ways, she explains.

Employees received one week of training after the system was installed. Trainers stayed on-site the following week for additional consultation.

"We found that, regardless of age or sales experience, employees took to the computer system, especially when they found that it would help them," Wichers says. Average training time was three months, he says.

According to Hilton officials, Answer Net's advantages over the old network are many:

- **Better information.** The system provides a minimum of four pages of information — which the end user can add notes to — on each account. Besides noting each event for which the client uses the hotel, such as annual board meetings and quarterly technical forums, personal client information about spouse birthdays and favorite wines are also included.
- **Lead management.** Regional and national sales managers can now check on the progress of leads they forward to local hotels. Moreover, national and regional sales offices can receive leads and forward them to local hotels, which lets the sales staff meet customers' needs more quickly, Wichers says.
- **On-line access.** Employees no longer have to use paper files to get missing information. Regional directors can get details on sales calls via PCs, eliminating travel time and increasing speed.
- **Room tracking and messaging.** The system lets users see what rooms and meeting areas are currently in use. In addition, a salesperson can see what room the client is in and leave a computerized electronic mail message that the switchboard operator can deliver to the guest.
- **Greater access and easier use.** Answer Net lets sales reps use their own IBM Personal System/2s to log on at home or at the office. Users also get simpler commands and a menu-driven interface. "Hotel salespeople are a type-A breed," explains Gail Moore, manager of

Hilton's 'superuser'

Answer Net boss Chris Wichers came from an unusual position to spearhead an IS project: His last job was regional director of marketing for Hilton's Western and Central regions.

A self-described "superuser," Wichers had taken classes in telecommunications. "I knew enough about PCs to be dangerous," he says, "but I also knew how the system needed to be used."

Under Wichers' direction, Answer Net was designed to reflect the way sales reps do business. In real life, one salesperson might handle research and development meetings, while another does new product introductions. Answer Net, therefore, organizes client information by event.

Wichers' team consisted of approximately 25 employees, including Hilton sales and computer systems staff and employees from Compass Computer Services, a company owned jointly by Hilton and Budget Car and Truck Rental. AMR, an affiliate of American Airlines, joined Compass as a management consultant in 1989 and now manages Answer Net maintenance.

Wichers says Answer Net was started in 1986. It was completed about 150,000 work-hours later, in June.

For Wichers, there's no question the effort was worth it and that having an end user guide the project was the way to go.

Because Answer Net allows the company's 15 national sales offices to communicate readily with its 48 hotel locations, Wichers says, "salespeople who once felt they were working for a local hotel now feel that they are part of a wider company."

JANET MASON

sales management systems at Hilton's Dallas office. "They want information quickly."

"Now, salespeople no longer have to take the time to make a status report for the manager," DePaul notes. "The [lead management] function helps them meet their own goals of how many sales calls they will make in a given time period."

Burkhardt says the ability to access Hilton's reservation system, and in some cases the local hotel's property management systems, makes Hilton sales staff even more responsive.

"When salespersons want to verify whether reservations have been processed, or what the general guest room availability is, they can hot-key into the reservation system," she says.

Close-up

Organization: Hilton Hotels.
Goal: Connect local, regional and national sales offices and have them operate as an efficient whole.
Strategy: A network of PCs connected to a central mainframe at headquarters.
Payoff: Tailored client information, lead management, quick turnaround time on customer requests and access to reservation and property management systems for more informed sales pitches.

More importantly, the new system also ties into a new way of promoting Hilton hotels, officials say. "Salespersons now are coached to ask the customer what he wants out of his stay at the hotel," Wichers explains.

For instance, a client may want to use the hotel as the site for unveiling a new product to its sales force. That probably means the client has high security needs and that his people will be under an enormous amount of pressure and will need a place to unwind.

Sales more tailored to client needs have helped Hilton become more profitable, officials say. While Wichers says that figures on increases in sales leads and profits are proprietary, he claims that both "have increased substantially."

Answer Net is also cheaper than the old system, Hilton officials say. "There's a tremendous cost and time savings with co-op processing," says Jim Whitworth, an Answer Net project leader.

But the main benefit of the system is speed. "And in sales," Wichers says, "speed wins."

Ed Watkins, editor of industry trade magazine *Lodging Hospitality*, says Hilton could use a boost from Answer Net.

While the chain has always been seen as a good marketer, he says, and Hilton is among the top five most profitable hotel chains, its profits have been down lately.

Next steps

Future plans for Answer Net are already in the works. Currently, the system is being integrated with an automated function book called Delphi/Miracle, which tracks the future use of public hotel rooms, such as ballrooms, at three hotels.

Also under development is an "optimization plan" system that will be integrated with Answer Net. "This program will help a salesperson determine what they will need to charge in 1993," Burkhardt explains. "It will also help us determine our peak periods and downtimes during the year. Ultimately, it will help clients by saving them money and at the same time increase occupancy for Hilton." •

Mason is a free-lance writer living in Philadelphia.

Nuts and bolts of Answer Net

The Answer Net system stores customer information in a program written in Cobol and an IDMS database that resides on an IBM 3090 380J running MVS at Hilton's Dallas office.

The mainframe is connected via satellite transmission and telephone lines to 500 IBM PS/2 Model 50s and 70s running DOS 3.3.

The system is based on cooperative processing between the mainframe and the PCs, where the Answer Net software program resides on hard disks. The PC program requires 30M bytes of storage.

The configuration uses a second token-ring card in the file server — a PS/2 80 Model 111 — which connects the system to the proprietary property management system.

"This enables the property management system token-ring to see the whole Answer Net network as just another workstation," explains Elizabeth Burkhardt, director of sales management systems at Hilton's Dallas office.

Hilton uses Infront, an off-the-shelf interface package from Multisoft, Inc. in Lawrenceville, N.J., between the mainframe and the PCs. The system's 1,100 users typically perform 31,000 transaction/day from the PS/2s to the mainframe.

Some PCs are connected to the satellite channel via individual coaxial cables and others by Novell, Inc. token-ring networks. Each office has one printer. Attached to each local-area network is a high-speed printer.

JANET MASON

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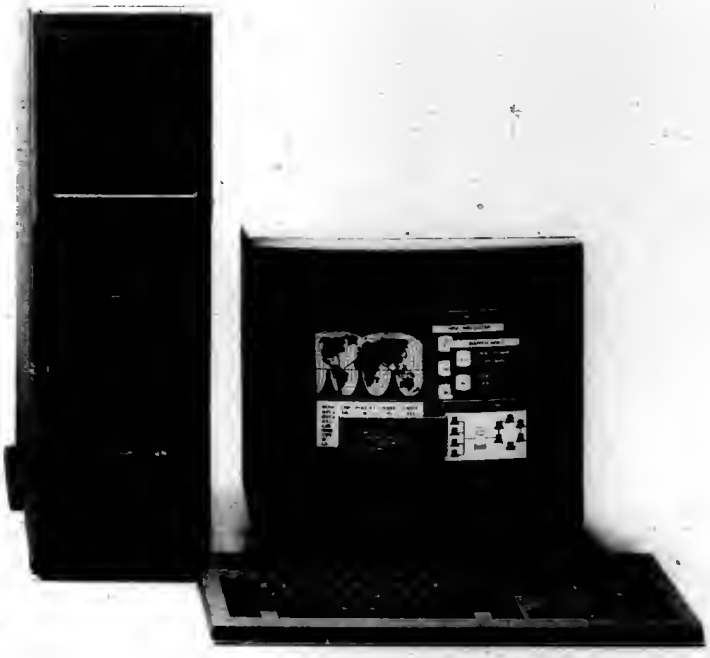

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INTERVIEW

Sharper image: EDS in the '90s

Electronic Data Systems' CEO Les Alberthal uses key acquisitions and outsourcing to gain points with IS managers

Les Alberthal, the chief executive officer at Electronic Data Systems Corp. for 46 years, is fond of telling visitors about an image survey the company commissioned two years ago. "The good news came back that we didn't have a bad image," he says. "The bad news was that we didn't have much of an image at all."

That was when EDS was still emerging from the long shadow of its dynamic founder and former chairman Ross Perot. Today, EDS casts a nearly $6 billion shadow of its own.

EDS has positioned itself to cash in on the trend toward information systems outsourcing by building a national network of data centers and acquiring a barrelful of vertical market expertise. Last month it bought Ticor Title Insurance Co. of California and a stake in Ask Computer Systems, Inc. In February, EDS bought half of Texas Air's System One airline reservations subsidiary, then turned around and signed a $4 billion contract to manage the IS functions at Eastern Airlines and Continental Airlines. It also inked recent outsourcing contracts with First Fidelity Bancorp., Westmoreland Coal and Neodata Services, Inc.

Alberthal spoke with Computerworld *Executive Editor Paul Gillin at EDS' Dallas headquarters.*

IS directors tend to have a split personality regarding EDS. They respect the fact that you can save them money, but they're reluctant to hand over their operations and strategic assets to an outsider. How do you think IS directors should regard EDS?
You've got a time now where businesses really need to consult with someone on how to [use technology acquired during the last 20 years]. What it boils down to is: What does a company have to do to get technology to accomplish something?

You've got the hardware suppliers, the consultants, the software product guys and guys like EDS all vying to say they can make technology work. All these companies are vying to find the guy in the company who will listen. The question is, is that the IS director or the CEO or the [chief financial officer] or someone else?

There will be some situations in which we'll market directly to the IS director, other situations where we'll market over his head. IBM faces that same choice. You watch IBM — as long as the IS director has enough authority to make a decision, they'll sell to him. The minute he loses, they'll be in that chairman's office.

What does the IS director need to do to make sure EDS doesn't come in over his head and put him out of a job?
Make technology work. If the problems are being solved, there's no need [for EDS to come in]. The problem is, there's a widening gap [between the technology curve and our ability to use technology]. The gap is our marketplace. The ability to educate, train and keep pace with technology is going to be more difficult than it has been . . . A CEO is saying, "I've done all this stuff and I'm still not competitive in the market."

You're still saying that the onus is on the IS director to do his job of managing technology; otherwise, EDS might be called in to do it for him.
Otherwise, the CEO has to look at alternatives. That can be across the board from changing the IS director to changing the hardware. I don't think we've got any industries today that are fat-catting it like they were 10 years ago, where they could just roll along with IS as a certain percent of the budget. That's gone.

Isn't EDS' ultimate goal to get a full-scale facilities management contract from the customer?
We are most effective when given a challenge and the authority to accomplish the task . . . We're very content to be a supplier of one piece of the overall solution, so long as we have enough ability and control to make that piece happen. I will walk away from a business deal if I can see ahead of time that there's no chance of making it succeed.

When a company hands over an entire facility to you, isn't it taking the risk that it's giving a strategic asset to somebody who has no direct interest in the success of the business?
Absolutely not. They've got more control over us than over their own employees. We have every interest [in making that customer successful]. If that customer doesn't succeed, we won't succeed. And even if, at the end of the contract, that customer decides to bring things back in-house or go somewhere else, we have to ensure that it's done smoothly and professionally. One negative relationship causes tremendous market problems for us.

One of the things the customer is getting with us is a lot of experience being a change agent. We don't have to bend to the buresucracy of an organization. An outside company takes its orders from the CEO.

What image are you most interested in portraying to the IS director?
We can be an ally to the IS director, or we can be a threat. We don't have as a goal to put IS directors out of business. We do have a goal of utilizing technology more effectively so that our customers can be more effective.

You've said that you believe the Eastman Kodak Co. outsourcing deal with IBM was overblown. Why?
There was an image of this being a winner-take-all kind of thing. We're still in there today as we have been with Kodak for years. IBM spent a good deal of effort making sure [its deal] was publicized and advertised. I could do the same publicity stunt [with some of our customers], but it would be a waste of energy. Most executives who make a decision of that magnitude know the facts.

Would you put your two most recent acquisitions, Ticor and the equity stake in Ask, in context?
Ticor is just an extension of our efforts to expand in the insurance business. It's an area that we think is in dire need of technology to do a better job, and Ticor was a way to get into that.

Ask is different. When [General Motors Corp.] bought us, manufacturing wasn't high on our list of credentials. After the GM relationship, we not only picked up 8,000 or 9,000 data processing specialists in manufacturing, but we also had a cram course on manufacturing. Ask represents access to software products and manufacturing that we can use for all of our customer base.

We try to use acquisitions to gain people and expertise that we don't have or products or a customer base we don't have.

Do you see anything along the lines of doing a deal with a major consulting firm, like the Big Eight mergers of a couple of years ago?
We've looked at that concept. I don't believe you'll see us do that unless we can make it effective for our customers. We've looked at it from a number of angles, but we haven't gotten comfortable with it.

Can you explain the reasoning behind the equity relationship you worked out in the deal to acquire Texas Air's System One reservations system?
We spend enormous time and energy when we start working for a customer, especially if it's on a full facilities management basis. In the past, they would have said they were going to have us run their computer centers, and we would have taken over the computers and people and that [asset] would be discounted back in our pricing structure. But now, more companies look at their data processing as an asset. They want some cash up front to do other things. It's not an acquisition; it's a change in the finance mechanisms.

Is outsourcing a long-term trend or is it just getting a bubble of publicity right now?
I don't think companies see it as a flash in the pan. They see it as part of a long-term solution to effectively use technology. I see it continuing for another one to two decades at a minimum. •

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OFF THE CUFF

Michael Seiden

Open your eyes, IS!

In many cases today, information systems consultants and systems integrators are selling dreams that can often mean nightmares for in-house IS departments.

Consultants and integrators are aware that most business managers feel they are not getting an adequate return on their IS investment. They are also aware that managers have heard about the examples of strategic IS successes: Citicorp, United Airlines, American Airlines, American Hospital Supply, Federal Express and so on. So crafty integrators sell management on the dream of using information technology to achieve competitive advantage in the marketplace.

On the other hand, internal IS departments offer managers a more mundane reality — the ability to keep existing systems running.

Not even the high prices charged by systems integration consultants can sway management caught up in its dreams. If management can be convinced it can beat the competition by using information technology, it will gladly pay the price.

In fairness, many systems integration consultants bring a lot to the table. Many consulting firms are large, world-class organizations with high-quality employees. They train staff in top-notch facilities and provide them with a full array of support tools — laptop computers, computer-aided software engineering tools and planning methodologies. Add these qualifications to the dream that systems integration consultants offer, and these outsiders present formidable competition for the internal IS department.

In fact, while the head of IS may be reporting to the chief financial officer or the vice-president of administration, the systems integration consultant is talking to the chief executive officer or the chief operating officer in most cases. They have a business relationship, not a technical relationship. By speaking to operating managers from a business perspective, systems integration consultants are seen as credible, which is often not the case with the internal IS department.

As management continues to buy into the dream, even cost becomes a secondary issue. Systems integrators are often very expensive and can sometimes exceed their budgets on company projects — without severe consequences. In contrast, internal IS budgets tend to be tightly controlled, with severe limitations on growth.

Here the nightmare begins. Management's dream state eventually begins to threaten the existence of the IS function. A serious question emerges: Can the internal IS organization survive in the company of the 1990s, or will it be replaced by outside consulting and facilities management firms? Unless the IS organization can establish its position as integral to the business structure, it runs a big danger of becoming obsolete.

So how can the internal IS organization survive against the onslaught of commercial systems integrators? The following are a few helpful, hopeful hints:

- IS departments must learn to distinguish between strategic *advantage* and strategic *maintenance*. Strategic advantage means using information technology to be different from your competitors. Strategic maintenance means using information technology to reduce costs and improve productivity to keep up with the competition and stay in business.

External systems integrators may sell management on strategic advantage while actually providing strategic maintenance. If this occurs, even successful implementation efforts can lead to management dissatisfaction.

- The IS organization must be a strategic, tactical and operational partner with operating management. Business activities, measurements, controls and plans must have the involvement of IS resources from inception through implementation. If IS is nothing more than a "call me when you need me" organization, its function could just as easily be provided by an outside organization.
- A company must develop and implement sound business strategies for the IS function. IS must be managed like a business, not just a technical support organization. This will ensure that the IS function is contributing to business goals.
- A company must develop sound information technology strategies. Technology costs money and should be used only when it adds real value to the business. There is nothing wrong with concentrating on strategic maintenance systems or with IS organizations that support the business in a least-cost mode. Strategic advantage systems aren't for everyone.
- The business must always retain control of consultants, systems integrators and facilities managers. While these consultants can be useful in the right situation, their use should be planned, monitored and controlled in situations where their expertise can produce results and create real value. ●

Seiden is president of Seiden and Associates, a consulting firm in Englewood, Colo.

Continued from page 73

integrated systems, it is possible to access logical functions or databases *without* going through logical access points. It's a real dilemma."

Things are made worse by the fact that in many organizations, security historically has been a low priority.

Finally, in many cases, senior management does not see any conflict between integration and security. All these factors make some security consultants cautious.

Fears exaggerated

How bad is security? AMR Information Services, Inc. claims that when asked to do so for a test, it has been able to break into 90% of its clients' systems.

Despite rising fears, some information security experts question whether highly integrated systems are really more vulnerable to computer crime and vandalism than centralized or limited network computer systems.

Joseph Bologna, who edits the monthly newsletter "Computer Security Digest" in Plymouth, Mich., concedes that networks are probably a little more vulnerable than mainframes.

"The weakest link theory applies — that one unsecured PC in the network can expose the entire network to embarrassment," Bologna says. However, be cautions against blowing the problem out of proportion.

A recent Creative Strategies Research report seems to back him up. The study, "Managing Microcomputers in the 1990s," discovered that only 7% of data loss came from software-related causes and viruses — an indicator of security and access problems. Most loss was because of operator error, according to the report.

Al Belisle, chairman of the Information Systems Security Committee of the American Bankers Association, is outspoken on the subject.

"I have something unique in this field: a business mentality. We have created information not to lock it up, not to encase it in concrete, but to make it available to those who need it," he says.

Belisle says integration is inevitable and the security profession will be forced to find solutions to security challenges without losing sight of the original goal.

"It is unfortunate that the whole world didn't grow up on one platform," be concludes. "But this is a country of choices. There is a real challenge to provide a secure environment but to stand in the way of integration is to stand in the way of progress."

How much security?

There is general agreement that better integrated security is needed. Views differ, though, about what constitutes effective and adequate security.

On one side are advocates of an aggressive approach. Beyond simple devices such as passwords, IDs and log-ons, they also see a use for biometrics and other more exotic devices.

Ideally, Campbell says, organizations would be able to automate security across multiple operating environments. The next phase would be to establish a security monitor with master data banks of all authorities, which would centrally manage pertinent security information.

While business-minded executives such as Belisle concur that all users should be identified and have passwords and other basic security protections, be cautions against overdoing it.

"When you have a loan officer who says that be couldn't close a loan because the system had him re-enter his password 27 times, and by that time the customer got fed up with the delay and went to another bank, management needs to look at how much security they really want," be explains.

To Ken Dehoff, managing director of the information security practice at Andersen Consulting in Chicago, good integrated security starts with organization-wide education.

"Security needs to be communicated to employees in the same way as quality," be says. "There needs to be an education program that says 'we work at this company; we do something that somebody else wants.' "

A sense of data ownership and responsibility among management and staff is a good first step, experts say.

Another solution lies in debunking myths spread by integration and open systems advocates, which Campbell says has led to misapprehensions about security.

"The myth of having to lay security aside to provide openness in systems is one of the major mistakes that we were making. Fortunately, people are becoming more aware of the openness of the systems they've created."

Dehoff agrees, saying, "We have the mentality that all information should have accessibility to all employees, which opens the portholes to the mischief makers, the browsers or the Shadow Hawk guy that comes in to copy or observe what's in the corporate database."

There is no strong consensus about which security measures will be successful. "For the most part, people are still trying to come to grips with disparate environments," Campbell says.

One sign of this trend is that many larger firms are paying more attention to security architectures. Belisle says: "More and more firms seem to be realizing that it's more expensive to add the bathroom to the house after it's built, rather than integrating it into the design and taking advantage of the natural plumbing." ●

Toigo is a free-lance writer and trainer in Dunedin, Fla., who specializes in business automation subjects. Maglitta is *Computerworld*'s senior editor, in depth/integration strategies.

From crude to refined

Five-year, $10 million project helps Champlin raise petrochemical quality, double output

BY KATIE CRANE

Five years ago, if you'd asked Warren Thompson if Champlin Refining and Chemicals, Inc. would be in business the following year, he would have replied with a confident "Sure." Then came the call that every business fears.

A major customer, peeved at small quality inconsistencies in its petrochemical product, issued an ultimatum: "If you don't fix things fast, we'll stop buying." The threat shook Thompson, manager of process control and computer applications at Champlin's Corpus Christi, Texas, oil refinery.

It was especially serious because Dallas-based Champlin has only about a half-dozen U.S. customers for whom it converts low-gravity, high-sulfur Venezuelan crude oil into gasoline, diesel fuel and raw materials for plastics, chemicals, synthetic fibers and fertilizer.

In this case, quality varied only a few hundredths of a percent from day to day and met specifications, but the client said even such minute fluctuations affected its plant operations. "When one of those big raw material users comes at you, it has a big impact," Thompson says.

Big impact may be an understatement. Heeding its customer's words, Champlin adopted a companywide quality program based on the quality and productivity principles of business theorist Dr. W. Edwards Deming. Thompson sums up this philosophy with one phrase: Always try to improve. The result was a $1 billion project to automate process control, thereby doubling petrochemical output at the Texas facility to 8,000 barrels per day.

A key part of the effort is a five-year, $10 million integration project that lets Champlin monitor thousands of temperatures and flows. Now, everyone from the president to a laboratory worker can access process and business information via 340 color terminals and a total of 10 Vaxstation 2000s and 3100s.

Customers seem pleased. "In the past two years we have seen significant improvement in the quality of Champlin's product," says David Krieg, a quality assurance coordinator at Dow Chemical Co. in Freeport, Texas. "The impurity levels have dropped dramatically."

In fact, the automation program has been so successful that Champlin earlier this year became the first manufacturer to win the coveted quality award from the U.S. Environmental Protection Agency (EPA). Visitors from Japan, Mexico and South Korea have toured the new automated facility, as have executives from Shell Oil Co., BP, Texaco, Inc. and Du Pont Co.

Mark Green

Champlin Refining's Thompson: *'We believe integration is strictly a software problem'*

Such reviews bode well for Champlin, one of the 10 largest Texas oil refiners and the North American subsidiary of Petroleos de Venezuela S.A., itself the world's fifth largest oil company and owner of Citgo. Its Corpus Christi refinery can handle 160,000 barrels of Venezuelan crude oil per day and counts among its customers Monsanto Co., General Electric Co., BASF Corp. and Du Pont. But like other refiners, Champlin faces a tough, volatile market that could be helped by technology.

David Capers, vice-president of Dallas-based Solomon Associates, an international management consulting firm specializing in energy and chemical industries, agrees, saying that the refining industry in general has been slow to develop "decision information systems." While Champlin's isn't the only such system, he says, it is among the best.

Ironically, pieces of Champlin's integrated system existed a decade ago. In 1980, the firm had developed a large database, called the Process Data Communications System (PDCS), which served as a repository for the refinery's process data. The database contained all data from the entire product life cycle, from crude oil shipments to finished product.

Eventually, Champlin added data from the laboratory, tank gauging system, maintenance work orders, central requisition system, electronic mail, Mass-11 word processing and Stone Mountain Graphic Outlook spreadsheets to the database.

But the system wasn't integrated. For example, users accessing one portion of PDCS were forced to log off in order to read another section. Sometimes it took longer to gain access to an application than it did to actually use it.

Even with such a hard-to-use system, Thomson recalls, "we were content. We were on spec. We had all the data. And we showed it very prettily." However, this was not good enough for some Champlin customers. So Thomson and his group started looking for a better way.

From the start, the motto was "keep it simple." Champlin approached its software vendors asking for simple routines, not large relational databases and sophisticated SQL calls to tie individual applications together. "We believe integration is strictly a software problem," Thompson explains.

The decision to buy off-the-shelf products rather than develop the software in-house let the company concentrate on what it does best, says Thompson, adding "We're a refinery, not a software developer."

Standard and smooth

Over a 24-month period, integration went smoothly, says Charles "Chuck" Roberson, a Champlin computer applications specialist. A big reason, he says, was that Champlin decided to standardize on Digital Equipment Corp. hardware and graphics displays. And unlike other companies, Roberson adds, Champlin was not saddled with a mix-and-match installed base that forced it to start from scratch.

Eventually, systems architects came up with a detailed strategy. Process control data is handled by Honeywell TDC 2000 or 3000 process control instrumentation. The current PDCS system links six processors from DEC: a VAX 6440 as the host, plus two VAX 8350s, a Microvax 3400 and two PDP-11/73s to feed remote process control data into the main computer.

The secondary computers also provide necessary monitoring and computer control for the more than 10,000 devices throughout the refinery.

These systems form the backbone for dozens of off-the-shelf applications, including supervisory control software from Setpoint, a maintenance management package from Fluor Daniel and process engineering software from Metiere. Setpoint also provides products for process control, networking, spreadsheets and statistical control as well as the current database for PDCS.

Champlin's IS staff also integrated a variety of specialized, independent databases, according to Roberson. A bar-code sampling and scheduling system controls tests through

Continued on page 84

Close-up

Organization: Champlin Refining and Chemicals.
Goal: Integrate process control and business data to improve quality of its petrochemical products.
Strategy: Revamp a 10-year-old process information database by integrating it with on-line business data.
Payoff: Doubled petrochemical output to 8,000 barrels a day. Won several quality awards from its customers as well as the Environmental Protection Agency.

Crane is a free-lance writer based in Norwich, Vt.

Continued from page 83

Champlin's laboratory.

A new laboratory system performs statistical controls on the analysis of samples. The Oil Handling and Movements Systems (OHMS) tracks as many as 200 tanks and most pipeline meters throughout the refinery, allowing anyone in the refinery to track the status of receipts, shipments and transfers of product.

This is just the beginning, Roberson says. "We're just starting to find all the neatsy-keens we can pull together."

Big productivity boosts

All told, Thompson and his eight-member staff (up from five in 1987) spent nearly 80% of their time during the last three years automating the process control function. But there's no doubt in their minds that it's been worth it.

Thanks to the project, Champlin was able to improve quality by adding the ability to gather data easily and quickly for mandatory environmental reports and to detect any disturbances that might affect the process, explains Richard Cadmus, a 30-year veteran of the oil and gas industry who now works for DEC as an industrial marketing manager.

Payoffs from the system have been substantial, company officials say. Though Champlin won't discuss exact numbers, it says payback on its investment is in months rather than years.

There have been internal payoffs as well, according to Thompson. For instance, a laboratory worker can now process five times the industry average number of tests in an eight-hour day because of the availability and quality of data.

Control is improved, too, he adds. "We can monitor 4,000 temperatures and 5,000 flows every 10 seconds throughout the process."

Now, users can access data from any terminal, select the plant area and process unit they want to review and immediately get a real-time process diagram.

For example, when someone wants an updated analysis of a particular stream — the flow of crude oil as it's being converted into a petrochemical raw material — the user simply points a mouse at that stream and clicks. The stream's lab results are displayed in a window, while in the background, the process diagram is being updated with live process data.

If there is a maintenance problem in one unit, someone can walk to any workstation, enter the work order and pull up equipment records, cutaway drawings, maintenance history or parts lists.

Hard benefits aren't the only measure of the systems' effectiveness, Thompson adds. Since the system went on-line, the firm has won four successive quality awards from the same irked customer that challenged it to change, he says.

"What we've done is not very sophisticated at all," Thompson says. What sets Champlin apart, DEC's Cadmus adds, is that the company *started* the quality and integration process. "It is like eating an elephant," he says, "you've got to do it one bite at a time." ●

F.Y.I.

Digital Equipment Corp.'s integration blitz continues. DEC won a $100 million contract to supply operational support systems for a German pan-European digital cellular telecommunications network.

In other news, DEC and **Ernst & Young** signed a nonexclusive service alliance agreement to pursue systems integration business in the health care industry.

The **Open Software Foundation** announced the Distributed Computing Environment. The offering was described as technologies for creating and using a distributed environment.

Software Publishing Corp. in Dallas introduced **Infoalliance**, a client/server software product that lets personal computer users on a network transparently access and manipulate data located in disparate databases. Users include companies such as **Provident Life & Accident Insurance Co.** and **Coca-Cola Information Services.**

The total market for IBM's **Systems Application Architecture** software is expected to be $3.1 billion in 1990, according to **Market Intelligence Research Corp.**, a consulting firm based in Mountain View, Calif.

Interleaf, Inc. announced a $1.5 million order from **Canadair** for publishing software, systems integration services, hardware and support. The system will be used to produce technical documentation that meets Air Transport Association specifications.

San Diego-based **Simpact Associates, Inc.** received a $1 million contract to provide wide-area networking equipment to **Contel Federal Systems.** The equipment will be used in Contel's project to modernize U.S. Air Force weather information systems worldwide.

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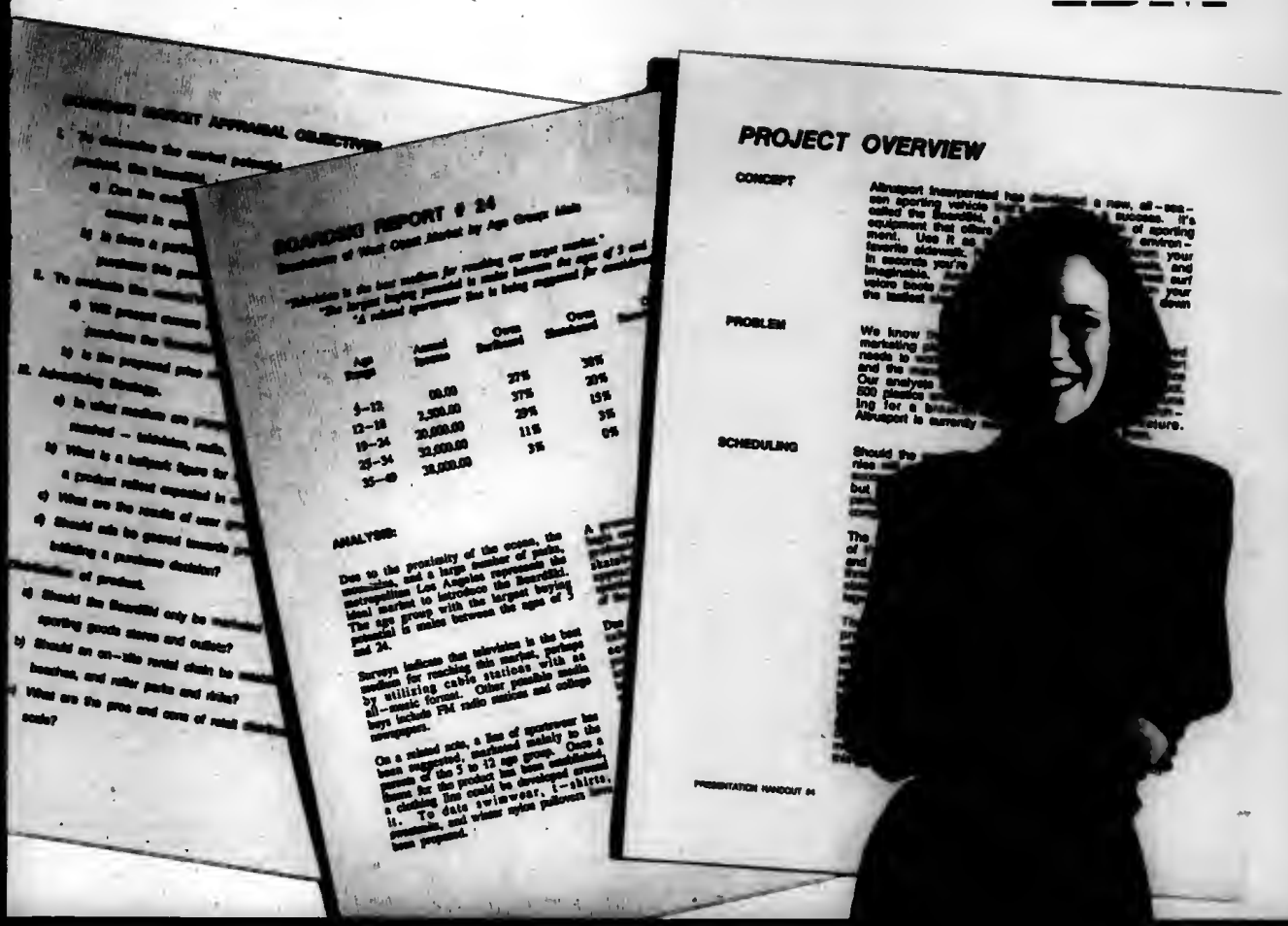

TYING IT TOGETHER

George Van Ness

The art of risk management

A recent Federal Aviation Administration systems integration project, worth about $1.5 billion over 10 years, was bid on by just one systems integrator. Why such a poor showing from the integrator ranks? Potential bidders reportedly balked at the risk involved in the project.

True, this is project planning on a grand scale. But firms of all sizes are turning to large systems integration firms to manage the risk of their projects.

Expecting the systems integrator to act as a deep-pocket partner who absorbs the financial loss if the project is late or fails is not realistic. Managing the risk together is. A firm is more likely to build quality systems by having clear goals, managing with those goals in mind, hiring the right people, creating a sense of teamwork and devising a good plan.

Many firms view systems integrators as general contractors in a construction project. The integrator is responsible for bringing together the diverse skills and components of many vendors that are necessary to build a working system.

Based on a limited understanding of what they want, user companies seek competitive bids, negotiate a tough contract and then assign a manager to hold the contractor's feet to the fire.

However, it has been shown time and time again that the contractor analogy does not apply when building systems. A construction project is about specifying and building something; a systems project is about capturing ideas, modifying people's work habits and changing the very fiber of how a company works.

People have strong feelings about how things are done and how they should be done in the future. The integrator has to help capture those objectives, develop a quality system and obtain acceptance of that system. The integrator also has to do all of this within a project framework that is frequently underestimated as to cost and duration and which may have been sold to management on unrealistic benefits to justify the high cost. It is no wonder many of these systems fail.

So how can your systems integration project be a model of success in which the risk is shared equitably? Perhaps the most important step is to discard the contractor analogy and understand that a complex systems project will require a team effort. The team should consist of an integrator, a diverse user population from a number of internal organizations and the internal IS professionals who will support the system once it is activated.

Because each of these groups has objectives that frequently conflict, the integrator and the client must establish and manage a realistic set of shared goals.

Risk-free advice

Here is some simple advice to reduce the risk for you and your integrator:

- **Pick the right integrator.** Each firm has a set of disciplines at which it is the best. Make sure there is a fit to your project and your management team's personality.
- **Establish a well-defined set of goals.** A systems project must meet the needs of the firm as well as time and budget constraints. A project leader must articulate these goals so they will be shared by all members of the team.
- **Develop and manage with realistic plans in mind.** Projects frequently fail because the plan was either superficial or detailed but not adhered to. A detailed plan is critical to success. Once the plan is complete, track progress and regularly update the plan as you learn more about the problem and the team.
- **Put the right people in the right roles on the project.** Perhaps the most important risk management tool is having the right people. They must understand their roles and what is expected of them at all times.
- **Establish and maintain a sense of teamwork at all levels of the project.** A large integration project is tough. There will be problems. Management must bring team spirit to the surface and resolve problems quickly. Most importantly, everyone must be working with the common goals of the project in view.
- **Establish a culture for quality.** Don't settle for doing things over vs. doing them right the first time. Everyone on the team must believe that. Clear expectations and good leadership are all part of this culture.
- **Constantly manage expectations at all levels of the project team.** With projects lasting one or more years, everyone can forget where they are headed. Project reviews, issue management and change control are all tools that keep everyone working toward common goals.
- **Treat others as you want to be treated.** The client has a right to high quality at a reasonable cost, and the integrator has a right to a fair profit for quality work.

It has often been said that managing risk is the uncommon use of common sense. Managing risk well can ensure a successful systems integration project. •

Van Ness is national director of information technology consulting at Coopers & Lybrand, a consultancy and systems integration firm in New York.

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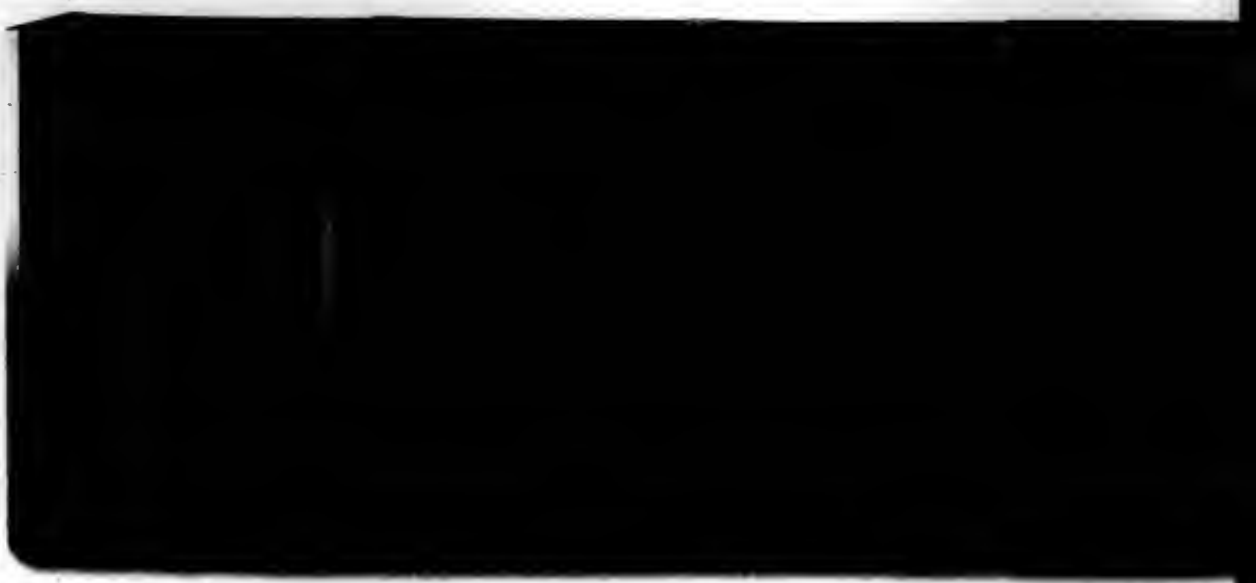

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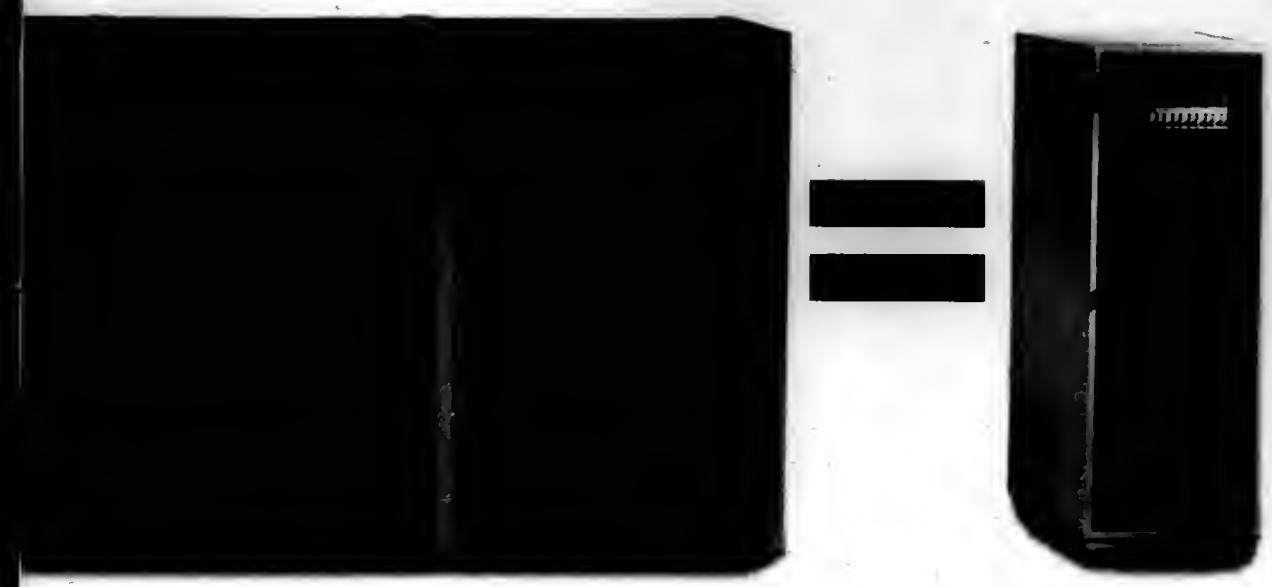

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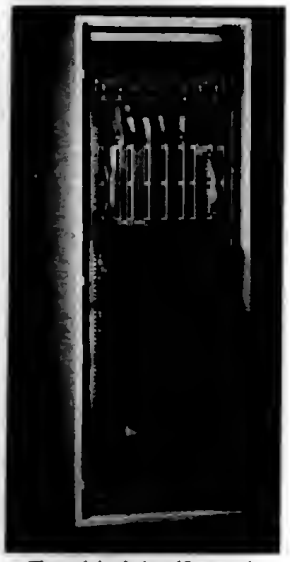

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Information must conform in a world without borders

BY JANET FIDERIO

Ask Hans Huppertz about the importance of information sharing in global corporations, and he'll tell you that it is necessary to forget most of what you learned in geography class.

"Global companies can't afford to operate as a series of independent geographic segments," says Huppertz, director of corporate information systems at Dow Chemical Corp. "They need to operate as a single global entity."

Dow makes 50% of its sales outside the U.S. and has manufacturing facilities scattered throughout Europe, Central America, South America and the Pacific Rim. While many Dow subsidiaries have their own manufacturing facilities and can react quickly to local markets, the need for corporate headquarters to coordinate and monitor activities is vital.

"We want to get the product as close to the customer's place of operation as possible," Huppertz says, "but we also need to remember the needs of our customers, and many of our customers are global customers."

Global customers, according to Huppertz, are companies such as Ford Motor Co., which may order products in Latin America, Canada, the U.S. and Europe and expect the specifications of those products to be the same no matter where they are sold. "In the past, each [facility] had its own specifications for dealing with the local customer," Huppertz says. "If you work, however, with a global customer — no matter if the customer is in Brazil or the Netherlands or the U.S. — it'a the same customer, and it wants the product to be identical in terms of specifications."

To meet the challenge, Dow had to rethink its IS network. "We are now tying our computer systems closer together so we can service our global customers on a global basis," Huppertz says. "We're also trying to make information available across all functions. In the past, a lot of the data we had was captive within independent operating units."

R. J. Reynolds' Ledford *says there is more to international communication than just the hardware*

Unification and standardization of information are becoming key priorities for many companies these days as it becomes clearer that international competitiveness requires coordination on a scale that cannot be achieved with isolated outposts.

"U.S. companies are beginning to realize they can't treat their foreign operations as 'also-rans' or 'stepchildren,' " says Susan Welch, president of Waltham, Mass.-based IMC Systems Group, Inc., a manufacturer of international trade management software. Welch is also a former import manager for Zayre Corp. Integrating these operations into corporate strategy and the corporate information flow is imperative if the companies are going to grow internationally, she says.

Information and telecommunications systems become more critical than ever when you start expanding into foreign territories, says Arthur Fairclough, director of import/export control at Unisys Corp.

Unisys opened its first overseas subsidiary in 1988, Fairclough says, but today it has overseas factories, OEM vendors and sales and service personnel in hundreds of locations, including Japan, Korea, Taiwan, the UK and France. Coordinating the activities of that many sites requires rapid communication and good information sharing, he says, and for that, "We rely totally on our systems."

Developing systems that are going to be invested with that kind of power is not just a matter of technical wizardry, however. As Bill Ledford, director of financial reporting systems at R. J. Reynolds Tobacco International, points out, international systems require a special kind of diplomacy.

R. J. Reynolds, which has manufacturing facilities in such locations as Puerto Rico, Canada, Ecuador, Germany, Korea, the Canary Islands, Malaysia and Hong Kong, uses a system called the Tobacco International Consolidation and Reporting System, or TICRS, to help management keep track of international activity.

TICRS, which incorporates electronic mail and McCormack & Dodge's General Ledger 3.0, is not only a mixture of internally developed and commercial software, according to Ledford, but also the result of a great deal of human networking between the development team and the staff members of overseas facilities. "We involved the people offshore since they were the ones who would make the thing work or not," Ledford says. "Before we put that software in, we talked to them and said 'Here'a what we're thinking about doing, give us your opinion of it.' "

Ledford and his team spent much of their time demonstrating the Input/Interface package — proprietary menu-driven software that lets foreign offices request reports from company headquarters and download profit and loss information as well as balance sheet and cash flow data throughout the month to corporate headquarters. They can also use the package to create a local database and run trial balances.

"We took it out and demonstrated it to them," Ledford explains. "We couldn't even hook it up to the mainframe because we didn't have the interface for the McCormack and Dodge system ready, but we took it out and said 'Here'a what it looks like, here'a how it operates, what do you think? We still have time

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Fiderio is a Gilsum, N.H.-based freelance writer.

NEC modems keep information moving as if your life depends on it.

In a 911 emergency, to risk a communications breakdown is to risk a life. So if you don't want to take any chances, make sure your modem can handle the pressure in a crisis.

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to change it.' "

When it came time to install the system on the IBM System/36s, 38s and Application System/400s used at 12 of the company's facilities, Ledford sent two people to each location to install the software and train the staff — one systems person and one finance person.

"We found that this worked very well," Ledford says. "As a side benefit, you get to know the people out there, and now we've got both systems and finance people who have been to these offshore locations who probably never would have gotten there any other way."

Another added benefit is that the foreign staff now has names of people at corporate headquarters whom they feel comfortable contacting when things go wrong. Having a personal contact reduces feelings of isolation. "That pays a lot of dividends, and we feel good about that," Ledford says. "We constantly get phone calls from these people. The question may have nothing at all to do with the system, but they know us so they call, and we'll scramble around here and find someone who can help them."

Dow's Huppertz *says a firm must work as a whole*

'World has to be involved'

Dow's Huppertz also makes the point that building a system on this scale takes coordination between those who provide the technology and those who will use it. "This is not the kind of thing you can do in one location and hope to roll it out to the whole world. The world has to be involved to make it successful," Huppertz says.

Dow uses project teams that consist of both users and IS staff. Project teams work closely together and are located in one building. If, for example, a module for use in a French subsidiary is being designed, a member of the French staff who understands that facility's requirements is a member of the project team. That professional resides in the U.S. during the development cycle.

"When it is time to implement the new software, these people go back to their homeland and take part in the implementation process," Huppertz says. "The biggest mistake we could make today is trying to build [systems] in the isolation of the IS department."

A major component of Dow's strategy for global information exchange is its proprietary order chain system. After almost two years of development, pilot modules are scheduled for implementation during the next two months in the U.S., Europe and Canada. When completed, the system will be able to track the status of any order worldwide, from the time it is placed to the time the order reaches its destination.

One of the benefits of such a system, Huppertz says, is that it allows the company to communicate with customers in the same product language around the globe. "If we sell a product here or on the other side of the world, we have the same product code for that product," he asserts. "You can't have different codes and different names for your product."

Smooth trafficking of orders to widely dispersed manufacturing locations and the ability to capture information about orders on inventories in standardized forms were two major objectives that led Unisys to develop its Consolidated Backlog System.

This integrated system for order management, inventory management and invoicing, which runs on four Unisys A/17s in Detroit, can be accessed by sales personnel at all of the company's sites.

If, for example, a French sales representative wishes to place an order for a mainframe system, he enters all system specifications into the central system, which then breaks the order into its component parts and sends each to the appropriate manufacturing location.

The company also relies on its own proprietary E-mail system to keep dialogue open between corporate headquarters and distant personnel. "The most important point in the international environment is communications," Fairclough says. "The better you can communicate, the more efficient your business will be. The fax machine has been a great invention. The telephone obviously helps. But in terms of the time differences and getting things understood, global E-mail is a big assist to running a business properly."

At another computer maker, Harris Corp., E-mail is both a bridge across cultures and a symbol of the kind of diversity that multinational companies must accommodate. "We have Banyan Mail, CC:Mail, Profs, HPmail, HPdesk and Vaxmail all connected via [products from] Softswitch," says Karl McCalley, vice-president of systems. Harris generates approximately one-third of its sales overseas and expects that share to jump to 50% by 1994. Manufacturing facilities in

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Stretching the law

Worldwide consortium gives small legal firms big reach

BY BARBARA WIERZBICKI

As corporations become more global in their operations, the professional services that support corporations are finding that they also need to widen their horizons.

Lex Mundi, a worldwide nonprofit membership organization founded in 1989, allows its member law firms to expand without incurring the overhead associated with maintaining foreign offices.

The key to providing effective support for clients with far-flung interests isn't in trying to learn everything yourself but rather in cultivating a network of sources who can tell you what you need to know when you need to know it, founder Steve McGarry says. McGarry handled legal matters in 60 countries during his 10-year career as in-house counsel for Houston-based NL Industries, Inc.

From its small office in Houston, Lex Mundi connects more than 105 law firms and 8,000 attorneys in nearly 200 offices worldwide. In terms of staffing and technology, the group operates on a shoestring. Administration is handled by McGarry and one secretary. They work with several personal computers, a laser printer and a facsimile machine. Still, members say the information-sharing provided by the consortium helps them immensely when their clients need answers on how to proceed in foreign parts.

The core member service is referral. The group maintains 10 databases containing the resumes of its lawyer members, noting their areas of specialization and interest. This resource, members say, expedites research to make fast local connections for clients. It also fosters the formation of far-reaching personal networks.

Recently, for example, McGarry received a query from a member in Paris asking if any Lex Mundi members were likely to be interested in forming a special committee on global transportation issues. Turning to one of the databases built around a customized version of Borland International's Paradox database management system, McGarry found the names of 250 lawyers who spend more than 90% of their time dealing with global transportation affairs.

The ability to make that kind of connection in so little time really helps to level the playing field for small law firms, says Gerard Bruyninckx, an attorney at Trenite van Doorne in Rotterdam, Netherlands. According to Bruyninckx, U.S. companies with client interests in the Netherlands have traditionally relied on large New York or Chicago law offices with established branch locations in that country. With Lex Mundi, however, he sees the possibility of more collaboration among local firms in the two countries.

Wierzbicki is a free-lance writer in Apple Valley, Minn.

National flavors in the global stew

BY SCOTT KRAMER

Just because a company operates globally does not automatically mean that it loses its national accent. According to a number of consultants who have dealt with multinational firms rooted in various countries, there are some noticeable differences in the way that multinationals handle information systems, and these differences seem connected with their geographic origins.

"If you look across Europe, you'll see information technology following the mind-set of each respective country," says Brad Power, managing associate at Index Group, Inc. in Cambridge, Mass. "For example, Germany and Sweden are great at engineering and manufacturing, so that's where they are strong in automation."

U.S.-based corporations, some consultants say, frequently tend to be faster off the mark in adopting technology and, possibly as a result, less careful about assessing environmental impact. "Americans are more inclined to go for a technological risk to give them a big advantage," says David Stringer, international practice director at Arthur D. Little, Inc.'s Information and Telecommunications Management Practice in London. "In Europe, we're not getting into that game."

Ira Magaziner, an international business consultant based in Bristol, R.I., and co-author of *The Silent War*, a book about global competition, has noted a difference in the amount of preparation devoted to business process changes related to technology implementation. "In Germany, Japan and some other countries such as Sweden," he says, "more emphasis is placed in understanding the change in work organization clearly; there is more of an emphasis on changing work flows prior to implementation. That way, they get more out of it."

Location can influence business attitudes, Power says, and there are certain differences that carry through not only into business but also into use of information systems by business.

"When it comes to systems in general, any European [company] has to work across borders," Power says. "The U.S. first thinks about the U.S., while overseas is an afterthought." Furthermore, he says, European firms are used to designing systems to accommodate country-by-country variations. U.S. firms are just learning how to do this and still tend to think of Europe as a single market. For example, if a bank in New York needs to add a foreign currency for exchange rates into a computer system, it might entail a change in the system's architecture. A similar European institution, however, would probably already have a flexible system for diverse monetary arrangements. The U.S. thinks homogeneously, while Europe takes a more open-ended, heterogeneous approach, he says.

This openness to diversity manifests itself, according to Magaziner, in Europe's eagerness to embrace nonproprietary systems. "Unix is catching on quicker in Europe than it is here in the United States," Magaziner notes. "We talk a lot about it, but we're slower in moving toward actual adoption."

Kramer is a free-lance writer based in Irvine, Calif.

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Malaysia, Kuala Lumpur, India, Taiwan, South Korea and Ireland communicate over a dedicated network consisting of T1 lines and 56K bit/sec. lines to Europe and the Far East so that they can report their production and capacity to the home office in Melbourne, Fla.

Each facility keeps its own database, which the central office queries weekly. All facilities share a common planning formula. Manufacturing facilities report their capacity, and marketing offices report demand. All reports come into the home office in a common format. Using these reports, an integrated central planning engine combines demand and capacity forecasts to produce factory schedules and order acquisition schedules, which Harris communicates back to the field.

Few companies are staking quite as much on global networking, however, as Visa International. More than 49% of Visa's transactions were generated outside the U.S. in 1989 and, by 1993, the company expects more than 60% of a projected $700 billion in sales to be generated outside the U.S.

Power behind the drive

The engine supporting this expansionary drive is Visa's global network and sophisticated electronic transaction processing system, Visanet, which operates as a giant switch, connecting its member banks with customers worldwide.

Visanet's three data centers service five regions with more than 330 access points internationally. The data centers — in San Mateo, Calif.; McLean, Va.; and London — house IBM 3090 mainframes to handle the heavy transaction load.

At the San Mateo facility, the switching and authorization systems run on a IBM 3090, while clearing and settlement services run on an IBM 1090. Development work is done on an Amdahl Corp. machine. A 3090 in London and another 3090 in McLean fulfill more processing obligations. In September, a fourth processing center in Yokahama, Japan, will be operating using two IBM 4381s.

"Each facility is linked to a specific member base as well as being interconnected," says Michael Massey, senior vice-president of international operations

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Logistics and IS

The role that information systems play in managing complex shipping and logistics activities and in tracking the resulting import and export requirements can't be overstated.

IS, claims Susan Harris, corporate logistics manager at Intel Corp. in Santa Clara, Calif., is essential in helping her manage Intel's transportation and finished goods warehousing network. Harris is responsible for the movement of materials from the supplier to Intel's facilities, from one Intel facility to another and then from the final finished goods warehouse to the customer.

To track activities in Intel's U.S. and foreign facilities, the company is currently installing a new version of its sales and marketing system. The company plans to implement the system during the next four to five years and include a shipping module that will be used by the logistics department.

According to Harris, there's no way for organizations to get around installing integrated systems. When manufacturing, sales, purchasing, tracking and reporting systems are integrated, she says, you can respond more quickly to your customers.

"Think in terms of the fact that you're establishing a worldwide shop floor, and each of the workstations needs to be connected — just as you would do with a shop floor that's contained by four walls," Harris says.

Tracking details

Another concern of corporations that trade extensively across U.S. borders is how they can keep track of a dizzying assortment of laws and import/export requirements when moving products.

According to Arthur Fairclough, Unisys Corp.'s director of import/export control, keeping track of import requirements can be complicated and time-consuming because corporations have to comply with U.S. customs laws.

"You have to properly classify the goods for the correct payment of duty, and you have to comply with country-of-origin markings on goods and any other laws that the government happens to introduce," he says.

Fairclough and his staff use a third-party product called Import Statistics from Waltham, Mass.-based IMC Systems Group, Inc. to help them keep a corporate record of company imports with the import transaction, the duty paid and other statistics from the tip to the freight payments. Unisys also uses the package to match imports against exports for the duty drawback provision of the customs law.

JANET FIDERIO

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and the person responsible for overseeing Visanet. "In other words, the center in London communicates with both the McLean facility and the San Mateo facility." When Yokahama comes up, it too will communicate with the other facilities.

Visa uses T1 circuits, which span both the Atlantic and Pacific oceans, as well as the continental U.S. "We use the local telephone companies as well for the local connects that need to be made between member institutions and our local data centers, and we also use satellite links," Massey says. While most of Visanet's connections are leased lines, the company has dial-up lines and Switched 56 service available as a backup.

The result of this massive network is that Visa headquarters gets reports of regional activity every day. "All the systems are interconnected, so, for example, when our clearing and settlement system finishes running this evening, we will know the total dollars that went through the system. Then that is totaled," Massey says. "We know how many authorization transactions went through London, how many went through the West Coast and also the dollar amount when we go to clear and settle."

This trend information is also fed into daily, weekly and monthly reports that are sent to those responsible for ongoing market trend analyses. Visanet also lets the company's development team send system enhancements and emergency changes electronically through the network to each facility. "We don't have to mail tapes to actually enhance our systems," Massey says. "The system developers can do that through the facilities here."

Easier said than done

Setting up a network outside the U.S. is not always easy.

According to Massey, establishing systems and networks in some areas of the Middle East, Latin America and Africa, where local Postal Telephone and Telegraph authorities (PTT) are not as developed, may mean longer lead times to get service.

Once established, however, those links are usually reliable. And if they're not, Massey is prepared. "Once those lines are established," he says, "they're connected to what we call our Advanced Network, and they get the same monitoring as our major trunks between carriers."

The Advanced Network is actually Network Corp.'s IDNX Network, a fully automated monitoring system that warns operators when lines drop below specifications and reroutes traffic automatically when a link goes down. "IDNX alerts the operator that he has a potential problem. But at the point that the system has determined that degradation has reached a threshold level, it automatically switches to a backup route. The operator has to do nothing," Massey says. IDNX monitors all of Visanet's links, from the long-haul T1 to the local lines provided by the Bell operating companies in the U.S. and PTTs in foreign countries.

Massey could order international lines through AT&T or other long-haul carriers, who will do all the negotiating with foreign telephone companies for him, but he says that doing it yourself is worth going the extra mile. "There are some service bureaus that say, 'Give us your orders, and we'll handle everything,' but we stay very close [to our service providers], because what happens in the middle of the night if our folks have telephone problems?" Massey asks. "We want to make sure that there's a relationship established with the local companies so that we don't have to go through a third party."

Harris' McCalley *knows value of linking far-flung facilities*

In some countries you may have a choice of vendors, and in other countries, you may be negotiating with a government-owned facility. "Regardless, you still sit down, establish a relationship," Massey says. Not only do Visa's staff "members make personal contacts with foreign service providers, but they also establish service objectives that are measured each month.

"I spent a great amount of time in Japan over the last three months working with the local service providers, negotiating and understanding what they can and cannot do," Massey says. "When you come up with something that they can't perform as well as you may find in the U.S., you work to find an alternative."

Telecommunications networks and information systems are the glue that hold corporate global business strategies together.

In order for that glue to hold, the IS manager needs to be on the spot, whenever and wherever strategies are being formed or impacts are going to be felt.

"The IS manager must be involved in developing the business strategy and the way information management and technology will support that strategy," says Donald Marchand, dean of the School of Information Studies at Syracuse University. "If it requires redefining how R&D and manufacturing interact and what technologies they use to design products, he or she has to be there right at the planning stage." •

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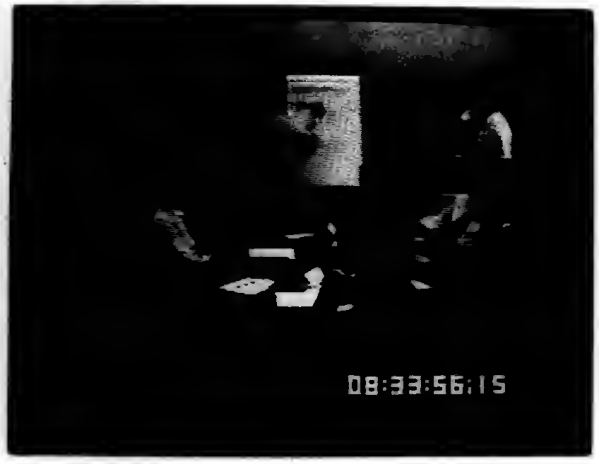

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No set rules for systems design

BY KATHLEEN A. GOW

Many factors, including geographic origins and locations of foreign sites, influence the manner in which multinational corporations handle systems planning and acquisition.

Japanese companies, for example, tend to encourage local autonomy wherever they operate as a means of staying close to local markets, according to Christopher Bartlett, professor of business administration at Harvard Business School and author of ***Managing Across Borders, the Transnational Solution.*** "If you shook a Japanese manager out of sleep today, he would be mumbling 'localization,' not globalization," Bartlett says.

In other instances, multinationals allow greater latitude for local decision-making in certain areas of the world. Many, for example, give Latin American business units and subsidiaries much more local control over systems planning and aquisitions than their North American or European counterparts. There are a number of reasons why Central and South American sites are accorded this special treatment. One is that systems and communications software used in other parts of the world are either unavailable in these areas or incompatible with the local standards. Another is that stringent government regulations frequently restrict the flow of information across borders.

Paul Mott

Corning's Shrednick ***doesn't rely on a single strategy***

Bartlett describes the challenge for multinational firms as being able to balance the need for local differentiation with the seemingly contrary objective of achieving integration and coordination on a worldwide basis.

Achieving this balance calls for a certain amount of flexibility in weighing the cost and efficiency advantages of centralization and standardization against the requirements of individual areas.

At Gillette Co., for example, David Lawless, assistant director of international systems, says Gillette Europe is handled very differently from Gillette Latin America. Europe has centralized planning and direction coming out of the Isleworth, UK, facility for every function, including IS. Latin America, on the other hand, looks like Europe did seven years ago: Although the region adheres to the framework of centrally developed hardware, organizational and procedural standards, there is much more local autonomy.

"Local control is useful to the degree that business requires resident systems, but it can mean higher costs and the risk of mismanagement," Lawless says.

At Stockholm-based Alfa Laval AB, local control is encouraged but within certain limits. In th early 1980s, Alfa Laval sought to counter a structure that was too cumbersome by decentralizing control of its business units, which are arranged by product area. The only requirement imposed on these units, says John Tower, corporate manager of MIS at Alfa Laval, Inc. in Park Ridge, N.J., is that they maintain systems compatibility with headquarters.

Alfa Laval uses an IBM communications network and midrange systems that vary locally. The seven business areas use different processes and manufacturing equipment, but some systems have come out of

Gow is a free-lance writer based in Medford, Mass.

headquarters, such as electronic mail and the in-house-developed Global Inventory File.

Corning, Inc., takes a very broad view of IS diversity. "We're opportunistic," Harvey Shrednick, vice-president of information services, says of the Corning, N.Y.-based conglomerate's approach to IS. "We share where we can and manage by prevention."

Lawless *values local control to a point*

Shrednick holds overall responsibility for corporate IS worldwide. He says Corning has not come up with a global strategy that it can use across the board. Rather, the strategy varies depending on the needs of the industry and the people involved in each unit.

In North America, IS operations are centralized and report directly to Shrednick. In Latin America and Europe, however, systems control for the consumer products groups is much more local. The central IS function provides advice and guidance, but decision-making authority for hardware and applications software rests locally. "We have chosen not to legislate what people use," Shrednick says. It is each group's responsibility to purchase equipment and software that will communicate with headquarters.

Although achieving worldwide coordination in this type of an environment is not easy, Shrednick says he stresses that individual freedom does not always lead to a choice to be different. He gives the example of a U.S. plant floor reporting system that was taken to Japan and adapted for Japanese plants, complete with a hot key between English and Japanese versions.

Managing by consensus

Many multinationals have set up international IS management groups to help achieve coordination through consensus. At Xerox Corp., for example, the Corporate Information Management (CIM) group brings together senior information managers from business units worldwide to make decisions on issues such as architectures, operating

Xerox's Campbell *sees advantages in resource sharing*

system software and primary database modules.

According to Judi Campbell, manager of strategic technology deployment at Xerox in Rochester, N.Y., the CIM group can also serve as a catalyst for resource sharing. In one instance, she says, a member — the liaison for Latin America — was able to identify an opportunity for adapting a set of systems developed for a European region to the requirements of a Mexican unit.

Bartlett says it is impossible to overemphasize the value of forums that permit face-to-face meetings. Globalization is not just to gain access to markets, he says, but also to gain information such as competitors' activities and government regulations.

"In the old role, the subsidiary served as a delivery pipeline, essentially acting as a dumb terminal," he says. "Now, they capture and transfer knowledge — not just raw data processing, but information" and, for that reason, "it is better to manage through socialization," he maintains.

Bartlett stresses that this transfer shouldn't just be between headquarters and subsidiaries but from one subsidiary to another: "That's what drives transnational innovation." ●

INTERVIEW

Potholes on the global data highway

Infrastructures, tariffs and line availability can all present headaches to the company seeking to set up a multicountry network

Shop carefully, compare prices and be prepared to settle for less than you really want in some areas of the world. That's Arthur Solomon's advice to companies attempting to construct multicountry networks in today's tangled telecommunications environment. Solomon, who recently spoke with Computerworld *staff member Stephanie McCann, is vice-president of the information and telecommunications systems section at Arthur D. Little, Inc. In addition to working in Europe, Australia, Asia and Latin America, Solomon has managed major projects in Thailand, Mexico, China and the Philippines.*

Q: How much of a networking hurdle do multinational companies face as a result of differences in the technological infrastructures of various countries?

A: A private multicountry corporate network is pieced together using the tariff services of the telephone companies or communication carriers in each of the countries it spans, and it usually involves national networks and international services. Many multinational companies have sophisticated tools for configuring networks and spend a lot of time negotiating tariffs and providing for the interconnection of pieces across national boundaries. It is a time-consuming process, because the services in one country don't always perfectly match the services in another.

Q: Are there significant variations in tariffs and regulations?

A: There are great variations in tariffs and regulations and big variations in cost. A company will often choose the locations of its main data centers based on the costs of services in different countries. Locating a data center in [West] Germany is very expensive, for example, because the tariffs there are very high. So a company might decide to put its main data center in the UK, where tariffs are much lower, but put in connections to [West] Germany.

Tariffs are very different from country to country, and they are changing as various countries liberalize their telecommunications environments. The typical cost for the same length of voice-rate private line for voice or data services could be twice as much in the UK as in the U.S. and eight times as much in [West] Germany.

Arthur D. Little's Solomon *says that carrier cooperation could eventually make management of international networks easier*

Q: Are there places in which the issue isn't price but rather whether you can get a line at all?

A: Definitely. In places such as South America, Africa and many parts of Asia, telephone networks are less developed and services are hard to come by, so companies have to take what they can get in terms of circuits and quality of service.

Q: Can you give examples of infrastructural differences that exist from country to country?

A: In contrast to the U.S., where international network services are provided by a number of carriers, in most other countries there is one carrier you have to deal with.

Infrastructures are also changing in some of the larger industrialized countries. In Japan, for example, competing international services are scheduled to be introduced within the next year or so. Right now, there are competing domestic carriers but only one international service. There is also a trend toward U.S. carriers providing services beyond the U.S. In Latin America, for example, AT&T, MCI and Sprint negotiate connections from Latin America to a location in the U.S. where they place a network hub enabling the customer to communicate with other countries.

Q: Are there any small quirks that may not be immediately apparent and that can cause large headaches?

A: A company will find a lot of service differences from country to country.

You can't establish a high-speed data link between the U.S. and [West] Germany, for instance, without a terminal interface. This is because there is a mismatch in available speeds. Sixty-four kilobit circuits are not easily found in the U.S., and 56K-bit circuits do not exist in [West] Germany, so a speed conversion is needed.

Even within Europe, interfaces are necessary to make one circuit look like another. In addition, there are cost discrepancies that can make a big difference to companies. For example, the cost of an international circuit will be different depending on whether it is acquired from a U.S. carrier or the carrier in France. You can get the same 9.6K bit/sec. circuit from either AT&T International or from the French PTT, but the cost will be higher if you lease from the PTT.

Q: How do companies with multinational networks handle network management?

A: Most U.S. companies with multinational networks have network management systems in this country that deal to some degree with the links to different countries. The limitation is that the database can only collect traffic statistics on the basis of measurements made in the U.S. Traffic between two foreign locations, such as Paris and London, can't be measured. Typically, parts of the network that don't touch the U.S. have to be managed separately from one of the foreign cities involved.

Carriers are making some attempt to deal with this situation, and, in the future, international carriers will offer to provide network management on an international basis to customers. Right now, however, that situation is more of a dream than a reality.

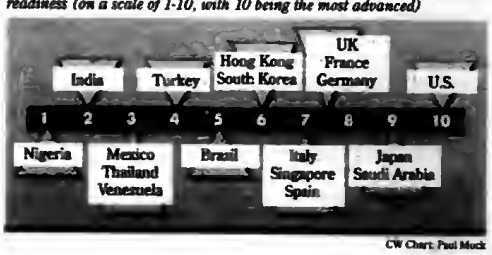
Q: Are there any developments in the wings that you expect will make the job easier?

A: Yes. Carriers in different countries are starting to cooperate with each other so they can provide a single point of contact for corporate customers.

This has been tried before with mixed success, but it is clearly a direction in which the carriers are going. There is a major effort under way among AT&T, British Telecom and Japan's Kokusai Denshin Denwa Co. to provide a single-source network option for organizations that need communications across the U.S., the UK and Japan. Also, last fall, 16 European carriers signed an agreement promising to work together toward providing a single point of contact.

States of operation

Solomon rates the following countries on their overall telecommunications readiness (on a scale of 1-10, with 10 being the most advanced)



CW Chart: Paul Muck

Write it down!

Oral histories are fine for nomadic tribes, but productive IS departments need good documentation and logic

BY CARLOS A. GUERRERO

Why do so many information systems departments encounter such poor user satisfaction? Why is the main complaint of systems analysts the difficulty of knowing what users want and need?

The truth is, both analysts and end users work very hard and very seriously to produce specifications. But in most cases, the results leave something to be desired. Each group is often dissatisfied with the job done by the other.

Worse, most systems are nearly obsolete by the implementation phase because the IS department already has a backlog of changes by the time the integration tests are performed. Even worse, most systems require so much maintenance that upkeep demands more time than the original development after just a few years.

Many analysts continue asking the age-old question: "Why wasn't I told this earlier?" This question is based on unrealistic expectations about the amount and quality of cooperation other departments can offer. It's sad, but misunderstandings will continue to occur unless IS professionals decide to accept the facts of life. That means adopting methodologies that match reality. Probably most important, yet least discussed, are methodologies that can produce good documentation at a reasonable cost.

Don't ask the user

Despite wishes to the contrary, it's impossible for users to know exactly what they want and need before the system is completed. Too many tasks need to be done, such as conceiving a new organizational model that would use a higher level of information for better business performance, helping prospective analyses, improving efficiency, reducing errors and speeding up their correction. These are not things users can do all at once with pure intellectual conceptualization.

Even if they could, there would be few benefits for users. There's a basic contradiction between the dynamic nature of corporate functions and the static architecture of computer systems. Systems are subjected to constant transformation. Managing something so dynamic requires specific strategies and very thorough, constantly updated documentation.

Documentation is the single most important thing that can help IS productivity. Good documentation keeps systems useful despite whatever enhancements and redesigns are needed to keep pace with changing corporate needs.

There'a no way IS personnel can change the way the world works from their desks. The only thing for them to do is change the way they do their jobs — specifically, by trying to prevent bad scenarios from happening in the first place.

To do this, IS managers need methodologies for creating good documentation. How does the lack of attention to documentation hurt an IS department's performance? Let's see what happens with a newly developed system.

Documentation writers commit their first mistakes immediately, when the rationale for the chosen design is still fresh in everybody's minds. Left to their own inspiration to provide explanations ir a narrative form, they fail to make some things sufficiently explicit simply because they seem obvious at that moment. In doing so, they forget one of the basic principles of good recording: "What seems obvious to everybody now may not seem obvious to everybody tomorrow — and perhaps to nobody."

One example of this "don't bother" attitude is the brief treatment often given to describing design idiosyncrasies caused by system integration constraints. As the other systems change, the logic of the design becomes a little more obscure, and things lose some of their raison d'etre.

Systems and program changes require someone to deliver the right products as quickly as possible. Further analysis for a possible redesign or extensive changes to the documentation are left for a future time when there is no backlog.

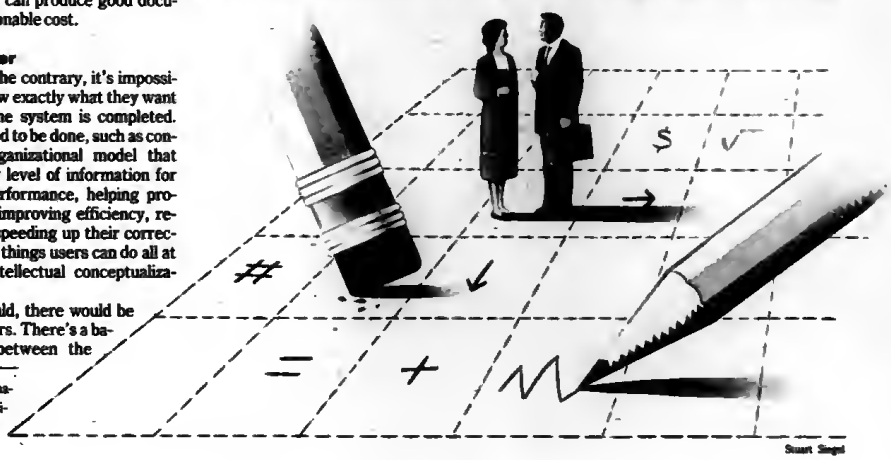
Of course, it's absurd to redesign something every time an important change is made. That would mean rewriting page after page of narrative documentation, which many managers legitimately refuse to do.

Nevertheless, the problem would be totally different if the right methodologies were used for documentation.

The price of doing it wrong

What else happens if the wrong documenting methodology is used?

The first noticeable effect is the multiplication of programs and job strings, as well as an increase in the number of times the same



Stuart Siegel

Guerrero is a systems analyst with 19 years' experience based in Sharon, Mass.

- **Good methodology is key**
- **What is obvious today may not be tomorrow**
- **Quality, not quantity, is the goal**

I'm sitting in a
about my son
above our house
I told him that
hand; however,
some unknown
and my little boy
MAINTENANCE
come up with
actually happen.
switch is devoted
for the tip and he
fly right, Dad,
for me going to

corner office on a round planet and I'm thinking

and how last night he looked at the crescent moon

and said, "Daddy, broken moon, broken moon." And

the moon would be fixed soon by a silent and unseen

the PBX that I bought for the corporation from

company might not be fixed any time soon at all,

who is only five said, "Dad, AT&T has a REMOTE

lab in Denver set up to detect any problems that might

their DEFINITY® System and fix them before they

You see, Dad, a full 1/3 of the memory of a DEFINITY

entirely to self-maintenance." And I told him thanks

looked up at me and said, "Straighten up and

because no silent and unseen hand is going to pay

college." AT&T provides several levels of remote maintenance and diagnostic services around the clock. Please call 1 800 247-1212, Ext. 106, for more information or a free copy of THE AT&T CATALOG. In Canada call 1 800 387-6100.

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records are accessed during every cycle. This in itself is not the main problem if you consider that the operations department is supposed to service the user community and the programming staff. Thus, because of the cost of programming, it's better to load the machine and the people.

In other words, the goal is to make things easy for the systems and programming department — even if it means increasing the work load for the computer. There's nothing wrong with this reasoning, and it's financially sound. Or is it?

Unfortunately, it's not. This approach immediately backfires by making systems and programs more and more unintelligible, maintenance more and more difficult and project management more and more complicated. People keep information to themselves, and it disappears when they leave the organization. IS then reaches its old age, which is characterized by decreasing response speed, increasing demands for more staff and diminished correspondence between systems in use and corporate needs.

The problem is also rooted in the general organization of work in the IS group. Time pressure and chronic understaffing promote a shortcut approach. This means that systems modifications are done economically; i.e., by doing what's necessary to resolve the problem at hand.

Tomorrow's problems

The deliver-strictly-what-you're-asked-for-now approach is nothing more than digging your own grave. IS executives are just as vulnerable to firings as those in other areas — and maybe more so. Maybe corporate managers are not as blind as they seem. Maybe there are inherent flaws in the way IS managers approach their metier.

There is probably nothing more distressing for chief executive officers than IS directors who cannot identify problems at their origin and thus demonstrate an apparent lack of knowledge about how their systems work. It's possible (although very unlikely) that an inquisitive CEO might want to look at the documentation. He will certainly find the experience so overwhelming that he will never want to repeat it.

Clearly, there's no need to produce a mountain of documentation that will soon be inexact, outdated and outright incomprehensible. On the other hand, somebody in IS *must* possess the necessary information.

Information exists in many cases, of course, but it is often kept in a person's mind and not documented. It is ironic that in a computer environment so much vital information is maintained in individual human memories. Every time a programmer or analyst quits, it means trouble for the organization.

Back to basics

The solution to all this lies in rationalization and systematization. The first thing to do is determine key aspects of the problem so you can concentrate on avoiding them. The most difficult thing to grasp is how things are put together — the general logic and rationale of programs, processes and systems. These are the things that allow people to think, conclude and resolve.

Discovering the big picture can be done perfectly with decision tables. In the past, managers wouldn't accept any program that was not accompanied by a flowchart. Today, no program should be accepted without decision tables.

IS EXECUTIVES ARE just as vulnerable to firings as those in other areas — and maybe more so. Maybe corporate managers are not as blind as they seem. Maybe there are inherent flaws in the way IS managers approach their metier.

Training in decision tables is essential for programmers; it's a pure logic. Although learning a programming language takes a short number of months, acquiring good programming logic takes between two and four years or longer.

Logic is also a very difficult thing to communicate, especially if documenters use the narrative method, which requires not only a substantial amount of time but also exceptional writing skills.

Consequently, people developed tools that stress the visual form of representation, such as decision tables and high-level flowcharts, among others. By using these tools, a lot of important information can be registered fairly compactly, and by following a set of standard procedures, this documentation can be kept updated with little effort.

Whether you use Warnier diagrams, Nassi-Shneiderman diagrams or any other means of visual representation, there's an additional advantage: Updates are easy because the specific procedure for construction doesn't leave room for personal styles. Nor does it depend on a person's inspiration. It's also easier to estimate a documentation work load, which guarantees almost 100% accuracy.

The relationship between documentation and systems and programs is not only essential in the maintenance phase but is also inextricably linked to the analysis, design, programming and implementation phases.

Professionals in the information business can do no less than make information accurate and readily available to their own staffs. •

NATIONAL
BRIEFS

Designated hitters

Kaypro Corp.'s new chief executive officer, Geoffrey Soule, the board of directors' choice to lead the computer company out of Chapter 11, has announced his own turnaround team. Stepping up to bat for Kaypro are industry veteran Hallock G. Davis and former financial services industry consultant Dan J. Mackie. Davis will oversee the firm's financial and legal affairs, as well as general operations.

■

High tech, low visibility

Many technology firms have much to boast about, but apparently few can claim that their wares are household names. **U.S. Landor Associates**, a marketing consulting firm, recently conducted an international consumer survey to find out which brand names were most recognized and respected. The resulting list of the Top 20 Most Powerful Brands in the U.S. included **Kodak** at No. 5 and **General Electric** at No. 12. Technology did a tad better on the the World's Top 20: **Polaroid** (20), **Panasonic** (13), **IBM** (9), **Kodak** (4), and **Sony** in the No. 2 slot — right behind Coca-Cola, Inc.

More National briefs page 111

Merger rides out storm of growth

Informix and Innovative learned the hard way that revenue boom requires control

BY JEAN S. BOZMAN
CW STAFF

MENLO PARK, Calif. — It was, essentially, a case of indigestion.

Informix Software, Inc.'s 1988 merger with Innovative Software, Inc., a Lenexa, Kan.-based firm half its size, was supposed to move the database company into the fast-paced world of personal computer software. That it did — but not without a painful year of adjustment marked by rising costs, financial losses and a 10% workforce reduction last January.

Today, with employment back at the premerger level of 1,200 workers, revenue of approximately $145 million and costs in line, Informix is back on its feet. But the dark days of 1989, when a new management team was brought in to restructure the 10-year-old firm, serve as a reminder that growth, no matter how positive, must be managed.

"We've learned a lot," Informix Chief Executive Officer Phil White said. "It's like marriage. The second time around, you're a lot smarter about how you do things."

Nevertheless, White, who still sees acquisition as the fast track to new technologies and markets, by no means rules out another one for Informix. "It takes more than two years to develop a new software product and get it out the door," he said.

The Informix/Innovative merger, which took effect in early 1988, got off to a good start, Chief Financial Officer Howard Graham said. Informix was then a $41 million software house, and Innovative had more than $20 million in annual sales. By grouping the two together, executives found that business was booming but had to be controlled.

Paul Mock

"Revenues continued to grow at 20%, but costs grew too," Graham said. "Selling more always sounds great. People say, 'It only costs us an extra dime to get that extra dollar.' But at the end of the day, there are hidden costs. At some point, you have to allow for support costs for the organization."

Double effort

By Jan. 1, 1989, it was clear that there was a duplication of effort between Innovative, which developed the Wingz graphical spreadsheet package for Apple Computer, Inc. Macintoshes, and Informix, which sells a Unix-based relational database management system, a fourth-generation language and computer-aided software engineering tools.

Informix founder and chairman of the board Roger Sippl, then CEO, decided to step aside in favor of a new senior management team. A professional recruiter found White, a former Wyse Technologies, Inc. executive with 15 years' experience at IBM. White, in turn, recruited Graham from Wyse and hired a team of senior managers who had worked at IBM, Hewlett-Packard Co., Alcatel Business Systems and ITT. Sippl spends much of his time working on software standards.

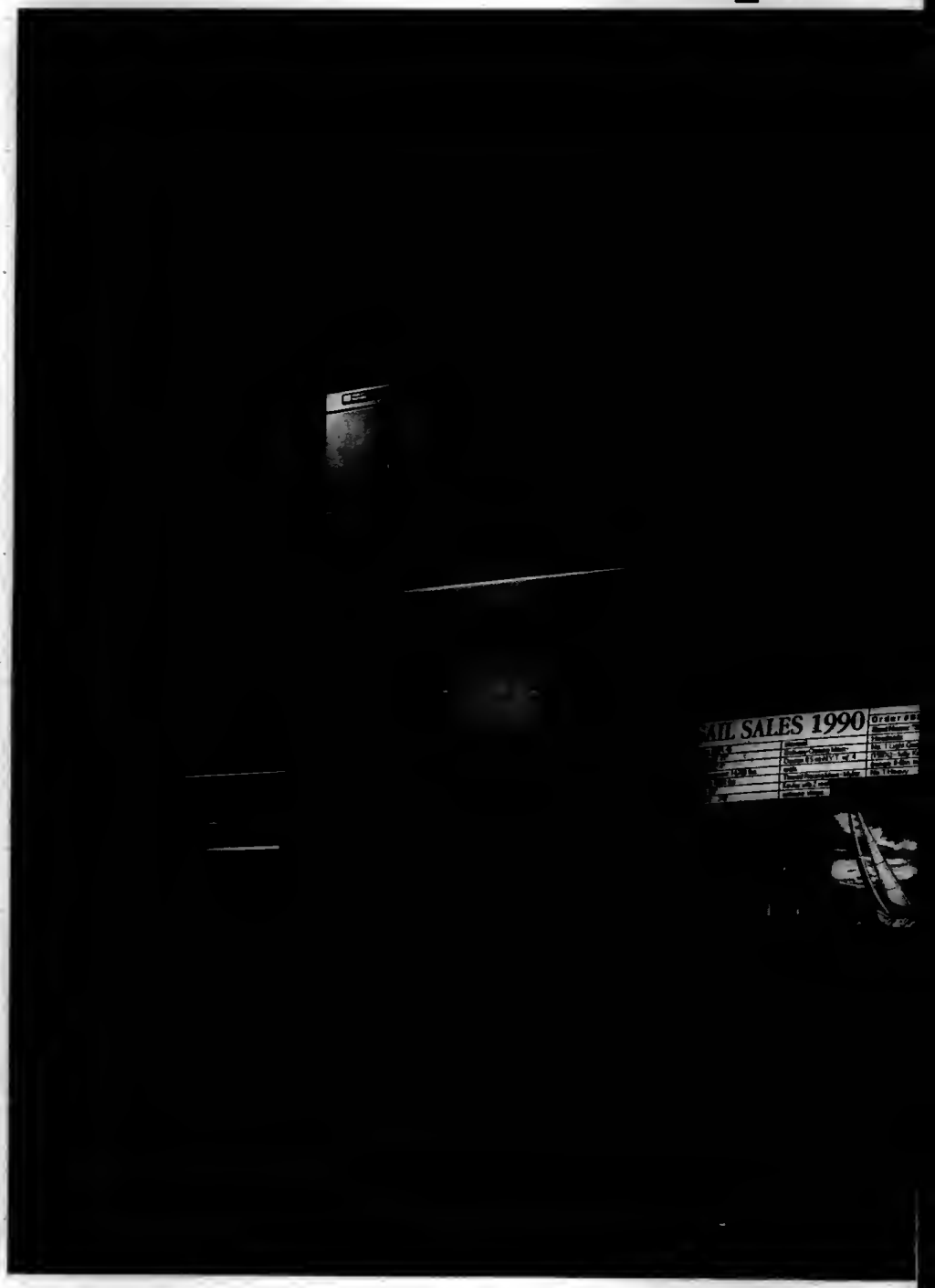
"Informix and Innovative had duplicate marketing, finance and manufacturing," White explained recently. "We were losing focus on the businesses, trying to get Informix to understand industrial-strength office automation and trying to get Innovative to understand databases."

To put things right, the very infrastructure of the company had to be shifted.

Industry analysts agreed that the firm is well positioned. However, Informix's annual growth rate of 20% to 30% is modest compared with

Continued on page 110

HP's RISC puts unprecede
HP's NewWave Office puts



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HEWLETT PACKARD

VDT makers face new liability issues

BY J. A. SAVAGE
CW STAFF

With the Swedish government announcing new limits on two types of VDT emissions and most major U.S. computer companies vowing to market low-emission VDTs in the near future, potential liability appears to be looming over manufacturers' heads.

VDT makers may be caught between an envisioned marketing opportunity for new products and their legal departments, according to one legal observer.

There has been no discussion of the industrywide cost of liability, a spokesman for the Computer and Business Equipment Manufacturers Association said. The decision by computer makers such as Sun Microsystems, Inc., Digital Equipment Corp. and Apple Computer, Inc. to develop low-emission VDTs "is a marketing decision, not a health and safety one," the spokesman said. "If customers ask for them, we'll make them."

However, Terry Mahn, a Washington, D.C., lawyer specializing in electronics issues, said that it is not quite so simple.

"If government regulates [the issue], it's one thing," Mahn said. "But if manufacturers change course in an attempt at self-regulation, a critical legal question becomes, 'What do they know? And when did they know it?' " He said that such a move on the manufacturers' part would likely become the basis for lawsuits claiming either negligence or product liability.

At this time, no studies have shown a clear link between health problems and electromagnetic emissions from VDTs. Yet concern is snowballing.

Last month, the San Francisco Board of Supervisors said there was majority backing for a bill to help limit exposure, especially to pregnant women. Late last month, Sweden announced the world's strictest government-enforced limits on emissions for VDTs. The country added extremely low frequency emissions to its list of restrictions and reiterated previously enacted bounds for very low frequency (VLF).

Sigma Designs, a Fremont, Calif.-based firm that has been marketing a VLF-limited monitor to the Swedes, plays down its low-emission marketing in the U.S. — largely because of the liability factor. "We don't want to unnecessarily alarm anyone," Sigma marketing manager Charles Waters said. "Even in Sweden, no one has proven anything conclusively."

If studies do show a correlation between health risks and VDT emission exposure — or if there becomes an overwhelming body of evidence pointing toward a correlation — VDT manufacturers could face two kinds of liabilities, Mahn said.

Easiest to prove

The easiest type of liability to prove is product liability. "Everyone in the chain of distribution is jointly and severally liable," Mahn said. On product liability counts, consumers do not have to show who is at fault. They do have to show connection between the product and health problems, he added.

Lawsuits based on product negligence would likely prove the most costly for manufacturers, Mahn said.

"Negligence is anything a reasonable person would not do, like putting something potentially harmful on the market without a warning or protection," he said.

Mahn likens the potental manufacturers' liability regarding VDTs to that which existed in the asbestos industry. If a "watershed event" — similar to the studies showing that asbestosis was caused by inhaling asbestos filaments — occurs with VDTs, "money wouldn't be any object" to the plaintiffs, he said.

Fortune 1,000 uncertainty adding to PC slump

BY PATRICIA KEEFE
CW STAFF

An increasingly tight-fisted Fortune 1,000 is said to be the culprit behind flattening shipments of microcomputer hardware.

Although estimated at just 20% of the overall desktop market, a decreasing flow of corporate dollars has forced many vendors and resellers to lower earnings estimates, prices or both this year, prompting Wall Street to respond with hold and sell recommendations.

In early 1990, analysts predicted personal computer market growth of 8% to 12%, down from 12% to 14% the previous year. Instead, growth has plummeted as low as 5% and should stay in the single digits through 1991, according to Rick Martin, a Prudential-Bache Securities, Inc. analyst.

This has led to price cutting from the likes of Compaq Computer Corp., Dell Computer Corp., AST Research, Inc. and Everex Corp., as well as rebates from IBM. A price war is raging in the Intel Corp. 80386SX-based PC segment.

Yet while hardware stands alone, other products are rolling off the shelves. Software, peripherals and other accessories are generally doing well, according to resellers. Companies targeting home users and small and medium-size businesses — the new growth areas — are also finding success, analysts said.

The most visible and typically the most sought after sales are in the Fortune 1,000. A close look at these accounts, however, reveals a camp divided between spending bulls and bears.

The bears say the worsening economy, budgetary constraints, corporate downsizing and, in some cases, near saturation of PCs are the reasons behind their cautious approach.

"This year, there is a cost crunch on," said Dennis J. Murphy, director of corporate information management consulting and support at GTE Corp. in Stamford, Conn. Corporate downsizing has also served to stanch the flow of invoices. "Fewer people need fewer workstations," he said.

Other users have grown weary of incessant upgrade cycles and leery of committing dollars to technology that is often usurped a few months down the road.

"The budget doesn't have as much to do with it as does the 'wait and see' in terms of the new technology to be introduced shortly," said Rock Blanco, vice-president of information systems at Garber Travel Services Corp. in Boston.

Uncertainty about migration issues is another stalling mechanism. Users will soon have a choice of five platforms: Microsoft Corp.'s Windows 3.0, Unix and three as-yet unreleased environments: OS/2 2.0, OS/2 "Lite" and DOS 5.0.

"I think the confidence level is not there for two reasons," said Andrew Seybold, an analyst at Dataquest, Inc.: Users are either unsure of their next move, or they no longer believe the computer industry, he said. "The whole industry has been guilty of misrepresenting the ease-of-use factor."

Bulls, on the other hand, tend to be in the throes of automating the work force or are aggressively moving into either Windows 3.0 or OS/2.

Richard Kowal, PC manager at Lever Bros. in Englewood, Calif., attributed his accelerated purchasing this year to a new system that demands a greater number of more powerful PCs. He expects to hit PC saturation in mid-1991.

INTERNATIONAL BRIEFS

Philips in Dutch

As the dust settles over the decision of Netherlands-based **Philips N. V.** to pull out of the static random-access memory development wing of the 18-country Joint European Submicron Silicon Research program, industry experts last week voiced concern that the move could signal reorganization of the market just as it appeared to be coming together. Meanwhile, in its ongoing effort to shore up its foundering computer business, Philips has signed on to sell **Motorola, Inc.**'s RISC systems under an OEM contract.

■

The winds of price war

Is there a price war about to break out in the European personal computer market? Market researcher **Dataquest Europe** and London-based securities house **Barclays de Zoete Wedd PLC.** think so. A report issued jointly by the two firms warned that **IBM**'s Personal System/1s are selling at a premium to all the competition in the midrange sector: notably Commodore Business Machines, Inc., Ing. C. Olivetti & Co. and Tandon Corp. If IBM wants to take a learned share of the continental home computer market, PS/1 prices will have to fall, the report warned.

Merger

CONTINUED FROM PAGE 105

RDBMS industry leader Oracle Systems Corp., which has traditionally coped with growth rates of 50% or more. Even with its recent financial setbacks [CW, Sept. 10], Oracle is speeding past Informix in sales — and RDBMS competitor Ingres Corp. may increase its market when it merges with software vendor Ask Computer Systems, Inc. [CW, September 17]. "The people at Informix are surfing, but they're not on top of the wave," said Tom Moore, an analyst at Framingham, Mass.-based market research firm International Data Corp.

Indeed, Informix's revenue is just a fraction of $971 million Oracle's — and just a step ahead of $157 million Ingres, which is struggling to hold onto market share.

Yet Informix bests Oracle within the Unix marketplace. "In terms of the number of DBMS units shipped, and in terms of the Unix DBMSs shipped, Informix is No. 1," said Julie Rodwin, a senior analyst at Infocorp in Acton, Mass. However, she added, the value of Oracle's Unix-based DBMSs is higher than Informix's. Oracle's Unix DBMS sales totalled $155.7 million in 1989, compared with Informix's $106.2 million.

Informix's White *likens mergers to marriage*

According to some analysts, Informix's PC products and the Unix-based RDBMS and 4GL tools have not yet reached true synergy. The Wingz and Informix Turbo/Online database products weren't even linked until this year, when Wingz got an interface called Datalink. Now, Informix is going after additional PC/local-area network connections, announcing support for Novell, Inc.'s Netware 386 last month and advertising new Wingz ports to the OS/2 and MS-DOS operating systems. The firm also plans to add a graphical user interface to the popular Informix 4GL application environment.

Surfing or not, Informix's strategy is to ride the downsizing wave all the way to the beach. "People are going to keep their IBM mainframes, for the most part, as a repository for corporate data," said Jeff Bork, vice-president of marketing. "But they are adding distributed Unix servers throughout their departments and divisions."

Sitting pretty

At a time when most RDBMS vendors are struggling to bring costs in line with incoming revenue, Informix executives said they feel they have cleared that hurdle and can concentrate on future growth.

How? Where competitors emphasize a strong direct-sales force, Informix prefers to let large systems manufacturers, such as AT&T, NCR Corp. and Unisys Corp., along with some 2,000 value-added resellers (VAR), resell its RDBMS engine. By its own account, Informix has sold most of its products — its low-end Unix servers and RDBMS tools — through third-party systems integrators. By policy, Informix sales representatives are rewarded for OEM and VAR sales even if they didn't ink the deal.

Without the heavy burden of a high-priced direct sales force, Informix feels it can grow comfortably, even as some RDBMS competitors struggle to keep costs under control [CW, Sept. 3]. "We are well positioned to hang in there if the economy slows down," said Jeff Bork, Informix's vice-president of marketing. "If it picks up, we're ready for growth."

Though the indirect sales strategy is a success, Informix has paid a price in terms of visibility. "We do have a lower profile than our competitors because we use indirect channels," said Roger Sippl, Informix founder and chairman.

"We also get many fewer dollars per unit, so our revenue isn't on the order of some of our competitors." However, advertising campaigns and increased interchanges with the analyst community are designed to boost Informix's image as a provider of end-user systems, he said.

Whatever cost Informix has incurred on account of its partnering ways, Sippl said, has been outstripped by the strategy's benefits. "We're not going to change the formula," he said. "Dealing with business partners is a winning formula for the 1990s. The direct sales model is an outdated model. This new world of open systems is really a world of systems integrators more than anything else."

JEAN S. BOZMAN

COMMENTARY

James Daly

Of sailing ships and sales dips

You've got to hand it to Steve Jobs. On paper, his Next Computer venture sure looks great: It's got style, mystique, scads of financial backing and has boldly promised to redefine its genre.

Yeah, well, so did the Titanic.

But whereas the great luxury liner went down like a rock after bumping into a big ice cube, Next continues to ride the waves of the computer industry, its hull strengthened by its leader's idealism and more than $130 million in investment capital.

It is clear, however, that Next will need to significantly readjust its original course.

There's no doubt that Next's sleek black cube is an exciting piece of work. Heck, if I ate a doughnut each time the word "revolutionary" was spoken in this industry I'd look like Dom DeLuise, but Jobs really seems to understand the concept. The Nextstep application development environment regularly draws raves, while the machine's slick communications tools and use of the emerging Mach operating system point in exciting new directions.

Trouble is, Next is like a salmon heading upstream. While the company's recent introductions have eliminated many of the obvious shortcomings of its first computer — high price, no color, slow speed, lack of applications — it is still unclear whether the new additions will steal customers away from more established vendors.

Several factors have lined up against Next, including a slowing economy and stiff competition from firms such as Apple, Sun Microsystems and Compaq. Additionally, most large organizations have significant installed bases that they are not willing to replace. Even the normally brassy Jobs has tempered his rhetoric. "We're cautiously optimistic," he said. "We don't want to get carried away."

Instead of burning down the house, insiders say that Next will instead become a pleasant addition to the neighborhood. Analyst Jonathan Seybold said that Next will find its place as a niche player, first in the desktop publishing industry. Next also continues to be popular in schools and universities — the firm's original market.

Despite falling short of its market goals, Next has succeeded tremendously in restoring something to the PC industry that seemed to have gone the way of the dodo: an infectious sense of adventure and the belief that rules are made to be rewritten.

Sure, the industry was founded on that premise, but anyone who has ever attended one of the humorless IBM or DEC announcements knows that they look and feel more like a wake than opening night. It only takes a few stony-faced marketing managers telling you how excited they are about a new product to realize the big lie this industry lives with.

In contrast, Jobs marked the launch of his new products with a celebratory dinner that included musician Graham Nash (who's using the Next machine for his photography habit) and billionaire Ross Perot (one of the company's financial sugar daddies). Personally, anyone who can seat a veteran of Woodstock and an ultracapitalist at the same table is all right with me — even if he isn't going to bounce the world on its ear again.

Daly is a *Computerworld* West Coast senior correspondent.

NATIONAL

BRIEFS

Big

OK, *Jeopardy!* fans, think fast: As of late last month, this company is not only a telecommunications subsidiary, but it also claims title as the largest U.S.-based purveyor of applications software to the financial services industry. Everyone who chorused "What is Nynex Information Solutions Group, Inc.?" got the right answer, now that the White Plains, N.Y.-based firm's acquisition of Stockholder Systems, Inc. has become final.

■

Supply slide theory

Large corporate users who rely on interconnected local-area networks (LAN) for their ever-more-sophisticated networking needs are heading toward a crisis that goes back to Adam — Smith, that is. Cambridge, Mass.-based Forrester Research, Inc. is finding that the current sources of supply are not equal to the big users' escalating demands. Forrester's report foresees the emergence of two new LAN distribution channels to bridge the gap: National resellers organizations and systems integrators with low cost channels.

Gleaning the most out of conferences

BY JILL VITIELLO
SPECIAL TO CW

If you're a typical information systems executive, scores of conference brochures march across your desk every week. But in this era of budget squeezing, conferences may be the first thing you cut from your list. Keep in mind, though, that short-term Band-Aids can leave long-term career scars.

IS professionals must stay on the cutting edge of technology to keep up with the competition — the No. 1 reason to justify going to industry conferences.

"People have told me that when they miss an important annual industry conference, they lose a whole year [of technical knowledge] in their business," says Dianne Winterberg, convention manager at association management firm Smith, Bucklin and Associates in Chicago.

Picking and choosing

Because of the abundance of conferences offered, it's up to you to choose carefully. Weigh all of the elements, including the conference theme, the topics of the plenary and workshop sessions and the speakers who will be providing the information.

Industry experts point out that conferences today are serving highly specialized audiences. If necessary, you can call the sponsoring organization for detailed information. Keep in mind that conferences put on by trade associations or user groups are usually more diverse and less parochial than those mounted by one consulting group, vendor or manufacturer.

After you've zeroed in on a conference, you'll probably have to build a solid case to convince your boss that you should attend. First, factor in your time plus the cost of travel and conference fees. Then jot down a list of things that will not get accomplished while you're away. By acknowledging the downside, you will deflate arguments against your going. After that, follow up quickly with a list of benefits the company will gain.

"If I return from a conference with two good ideas that I can implement in my own company, I feel the expense is justified," says Rich Davis, vice-president of information services at E & J Gallo Winery in Modesto, Calif. "After all, to bring in a high-powered consultant for two or three days would cost twice as much as gathering new ideas at a conference myself."

Assuming that you've made a good case for attending the conference, how do you maximize your time while you're there? In plenary sessions, be an active listener. Take notes, jot down ideas sparked by the speaker, and list questions to ask during the open microphone session. During workshops, roll up your sleeves and take advantage of the chance to acquire new skills and training. Participate by raising controversial points and listen to your peers' opinions.

If the conference features an exhibition, you will most likely be given a floor plan of the hall. Mark it up as you would a road map. By planning a route, you'll be sure to visit every vendor that may be of interest to you and your company. Keep moving forward as if you'd scheduled appointments at each of the booths you want to see.

Prepare yourself to take advantage of standing-around time, whether it occurs during the awkward first few minutes of a cocktail reception or at scheduled coffee breaks. Study the list of attendees the night before so that you will be able to recognize at least a handful of names on the name tags. Plan to ask a simple question to break the ice. For example, introduce yourself and ask your new contact about his or her daily responsibilities. This will generate a much more interesting response than the usual, "What do you do at Consolidated?"

Besides staying current, there is another good reason to attend conferences: to build and expand your personal network of business contacts. You may not see instant results, but this kind of informal networking will prove increasingly valuable as your career moves ahead.

"Over the years, executives have told me countless times that their contacts have helped them make wise business decisions," says Sheila Hoffmeyer, vice-president of Smith Bucklin. "It's impossible to overstate the worth of a reliable network."

Davis, for example, says he relies on his network to stimulate ideas or help find creative solutions. "It's good to know I can pick up the phone and call another IS executive and quickly get a new perspective on just about any issue," he says.

Networking begins when you bring a huge stack of your business cards to a conference and give them to as many interesting people as possible. The flip side of this is for you to collect as many cards as you can. Write on the back of each card when and where you met the person and what you discussed.

Truly effective networking continues after the conference ends. Follow up with the people you've met by sending letters recapping your conversations or enclosing an article you may have discussed. Suggest meeting for lunch if you are in the

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>
> RICH DAVIS
> E&J GALLO WINERY

same or a nearby city. Keep the dialogue open so that you can bounce ideas back and forth or ask advice at a later point.

After the conference, share information with your boss and co-workers, which will help justify future trips to conferences. Hoffmeyer suggests preparing a training session that condenses the information you received at the conference. Winterberg encourages conference attendees to prepare a staff briefing memo on key points as well as an opinion of the event so that associates can weigh the merits of going the following year.

All in all, IS executives are sure to agree that staying ahead of the game isn't easy, but it is essential. "People who are successful in this field are not stagnant," Davis says.

Vitiello is a speech writer and free-lance journalist based in East Brunswick, N.J.

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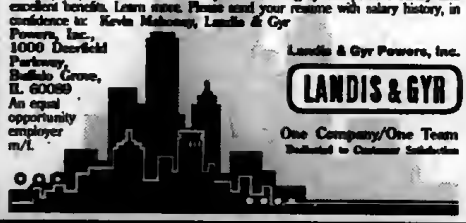

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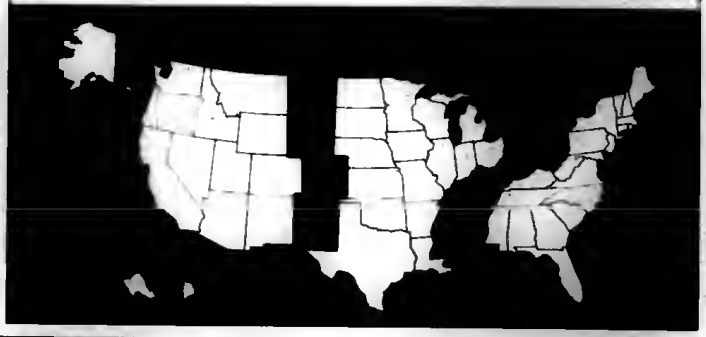

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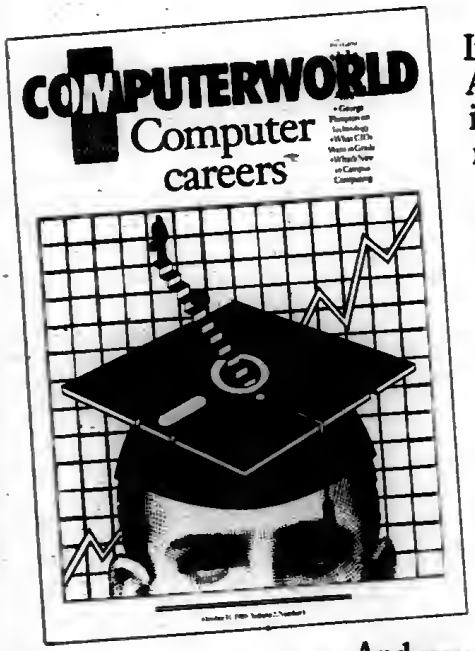

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- MIS salary and job satisfaction survey
- Where are the best jobs?/What positions are hot?
- Experiences of recent MIS graduates in their first jobs and what helped them in school
- The MIS career ladder
- Profiles of acclaimed top level MIS executives
- The strategic advantage of computers and how they play a key role in running a company

MARKETPLACE

Even if you have a warranty, you may not have a guarantee

Editor's note: Legal Eye is a monthly series exploring legal issues in the computer industry.

BY LEE GRUENFELD
SPECIAL TO CW

Computer warranting is one of the stickiest topics in the procurement arena. Part of the problem is the general assumption that a warranty means "If it doesn't work, we will fix it." Would that life were so simple.

There are several kinds of warranties (limited, general, express and so on) that are usually accompanied by disclaimers and exclusions. Unfortunately, courts will frequently reinterpret written warranties in ways that come as a great surprise to the parties who signed the contract.

Customers are usually favored in these cases because the court often finds computer warranties to be ambiguous, unclear or "unconscionable." The theory is that the customer is the novice in the deal, and the vendor is experienced. Very often, the court will look askance at a contract interpretation that is technically correct but that really makes no sense, is blatantly unfair or is legitimately misconstrued by the customer. Two recent cases underscore this judicial inclination and contain important cautions.

Some years ago, USM Corp. contracted with Arthur D. Little to have new accounting systems designed. The written agreement referred to the system as "turnkey." The specifications that formed the basis of the agreement referred to on-line response time goals for the system. When the system failed to work to USM's satisfaction and had response times in excess of the contracted goals, Arthur D. Little's efforts were halted, and USM finished the system on its own, ultimately replacing the hardware that ADL had supplied as part of the "turnkey" agreement.

USM sued Arthur D. Little, lost, and then appealed. The U.S. Court of Appeals reversed the lower court decision and ruled in favor of USM, the customer. The court's reasoning contains important lessons for anyone dealing with computer system warranties.

First, the court placed great emphasis on the word "turnkey," going so far as to say that use of this term created an express warranty that made Arthur D. Little responsible for the performance of the system.

As in other recent cases, "turnkey" is loaded with risk for any vendor who uses it, since the courts are taking it to mean a system that is completely finished and fully operational and that requires virtually no maintenance.

Second, Arthur D. Little had warranted that the system would be "free of defects in design." While the lower court interpreted this to mean that the design *document* would be error-free, the appeals court saw that this made no sense and applied the provision to the functioning system. More importantly, the court extended this interpretation to apply to the response time performance, realizing that there was an implicit promise to achieve the stated response time goals.

A critical point is that there are many ways in which a vendor can create a warranty without specifically stating that it *is* a warranty or even intending it to be one. Agreeing on a set of specifications, a set of design goals or a particular format can all be interpreted as an implied warranty. Only exclusions need to be extremely specific.

Finally, there is a long-standing tradition that general disclaimers do not apply to express warranties. If there is a warranty specifically stated, it stands as written. The USM case reaffirmed this tradition.

The second case, while not computer-related, could affect information systems. General Motors Corp. is currently being sued for knowingly selling defective diesel engines between 1981 and 1985. While the defects generally did not appear until after the expiration of the warranty periods, the suit alleges that GM knew about the defects and therefore breached an *implied* warranty.

The trial court initially granted GM's motion to dismiss the case since its written warranty was technically valid. However, an appeals court reversed the decision, saying it may be possible to show at trial that the warranty limitation was invalid because it was "unconscionable" of GM to limit the warranty in light of GM's knowledge of the defect. The U.S. Supreme Court refused GM's request to review the appeals court's decision, so the case is going to trial.

The impact on the licensing of computers and software is evident. If a vendor has knowledge of defects that it does not specifically disclaim at the time of sale, general warranty limitations — including the time limit — might not apply.

There is now an avenue to pursue if a customer has reason to believe the vendor was aware of a problem at the time of sale even if the warranty has technically expired.

Gruenfeld, a management consulting partner in the Los Angeles office of Deloitte & Touche, specializes in computer-related legal matters.

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Buy/Sell/Lease

The BoCoEx index on used computers

Closing prices report for the week ending September 21, 1990

	Closing price	Recent high	Recent low
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XT Model 086	$500	$700	$350
XT Model 089	$675	$825	$475
AT Model 099	$900	$1,075	$850
AT Model 239	$975	$1,025	$700
AT Model 339	$1,025	$1,300	$900
PS/2 Model 30-286	$1,250	$1,300	$1,125
PS/2 Model 60	$1,600	$2,000	$1,600
PS/2 Model 70P	$3,375	$3,400	$3,175
Compaq Portable II	$975	$1,150	$875
Portable 286	$1,275	$1,450	$1,100
SLT-286	$2,500	$2,825	$1,700
Portable 386	$3,000	$3,450	$2,950
LTE 286	$2,100	$2,525	$2,000
Deskpro 286	$1,375	$1,400	$1,200
Deskpro 386/20	$2,800	$3,100	$2,400
Apple Macintosh 512	$375	$775	$275
512E	$450	$450	$350
Plus	$900	$1,075	$800
II	$3,150	$3,400	$3,050

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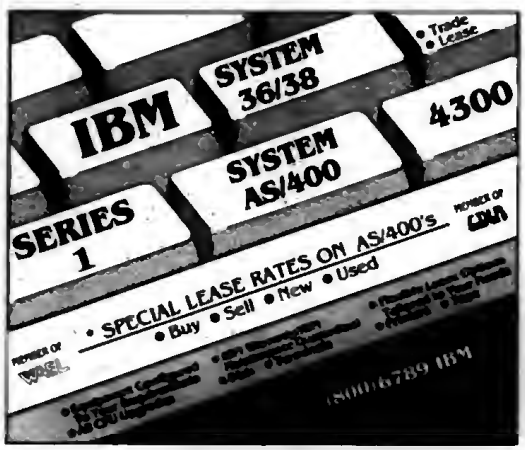

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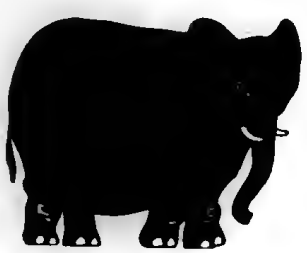

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* Source: STAT Resources Profile of Computerworld Subscribers, November 1987.

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Request for Proposal No. 1673, due Thursday October 18, 1990 at 3:30 p.m. for the acquisition of two MUX cluster controllers and 25 ASCII terminals to attach to UNISYS 5000/85 minicomputers for the MISSISSIPPI DEPARTMENT OF CORRECTIONS.

Request for Proposal No. 1674, due Thursday, October 25, 1990 at 3:30 p.m. for the acquisition of services for the development of a computer-assisted, instructional delivery system for the MISSISSIPPI DEPARTMENT OF ENERGY AND TRANSPORTATION.

Request for Proposal No. 1676, due Tuesday, October 30, 1990 at 3:30 p.m. for the acquisition of a production turnover/change management software package to run in an IBM 3090 MVS/ESA environment and compatible with the PAN-VALET source library management system for the State Computer Center of the MISSISSIPPI CENTRAL DATA PROCESSING AUTHORITY.

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Detailed specifications may be obtained from the CDPA office. The CDPA reserves the right to reject any and all bids and proposals and to waive informalities.

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Secrets of my success

Trainers considering self-employment must take precautions

BY LOU RUSSELL
SPECIAL TO CW

"All serious daring starts from within."
—Eudora Welty

I remember how I viewed training consultants: as glamorous, intelligent, worldly individuals who taught somewhere wonderful and different each week and made tons of money. I compare that concept to the life I actually lead — a challenging, exciting life, but one more likely to be led in Bismark, N.D., in February than in San Diego, and with a cash flow that is unpredictable.

People at conferences I attend are constantly asking me the secret of making it as an independent training consultant, just as I asked people before I took the plunge. All in all, it is well worth the daring, so I'd like to share a few secrets with people who are considering the move.

Goal digger

Optimism is the first trap to look out for. Individuals who have a knack for stand-up instruction on a particular technical topic often hit the street with no plan or strategy. Yet the most important aspect of consulting is setting goals and then building a strategy to meet those goals.

Although this may seem a little upsetting to those who had hoped to lose the bureaucratic, management-by-objectives paperwork that buried them while working for someone else, these new goals are different because they are your own. Once these goals are established, a strategy can be built to move toward them.

A lack of goals leads to a training consultant who tries to sell everything. This person is not sure where the money is and is trying to walk the fence, contracting to do any training that comes along. However, any business expert will tell you that although your product line should be flexible, you should have a specific vertical market in mind.

In consulting, this means that you pick your area of expertise, get really good at it, and stay up to date. There is also the danger that you will spread yourself too thin and not do anything well. Consultants are selling themselves, and one bad contact can sometimes be enough to ruin you.

Load us not . . .

Overhead is another temptation. Most people buy all the things that they equate with success — a fancy office, a nice desk, a new computer system or two, lots of software, fancy stationery and business cards. These things add pressure and force independent trainers to settle for contracts for financial reasons that may not move their companies in the direction they want to be going. Before saddling yourself with monthly expenses, try working at home, and grow into the large facilities when you need them.

Something else that amazes me is the number of people who leave financially secure jobs without any customers committed. Don't get me wrong. I am not encouraging you to take customers from your old employer; most conflict-of-interest clauses eliminate that possibility.

However, you certainly can be making contacts on your own time so that when the big break comes along, you have some assurance that your product line is going to sell. If you do not have the time to put in extra hours building your clientele before you quit, you do not have time to be in business for yourself.

Weekly news

Those of us who shine with technical and presentation skills are usually somewhat weak on marketing. This was the most difficult thing for me to learn. At one time, I would rather have taught a seminar to a million students than call one stranger on the phone.

Consequently, you need to get some background in marketing before you start a consulting firm. This can come in the form of books, professional organizations, training seminars or even other consultants. Things such as direct mail, telemarketing and advertising are foreign to most technical people but critical to the success of a consulting company.

I recommend that most people contract or hire to fill the marketing and advertising needs. Although it is good to try to learn things, and there is no substitute for being involved, it can be a serious mistake to try and do all your work yourself.

Grow with the flow

So, let's assume that things are flowing right along, and you are traveling to *almost* glamorous places and even making a good living. The next pitfall — laziness — sneaks up on you just when you think you have everything under control. The training consultant becomes so comfortable in his expertise that he stops working at staying current. Consultants, more than anyone else, need to keep their skill level at the leading edge.

The only way to do this is to drop out at least once a year and work on a project applying the skills you teach. One of the last things an instructor leaves time for is instruction for himself. Choose technical journals that are best for your topic and review them continually. Sooner or later, an out-of-date training consultant is going to be badly embarrassed in front of a substantial client.

Consulting is a fascinating field. You have to love hotel pizza at 10:30 p.m., and you have to be able to look good even though your suitcases went to a different city than you did. The up side is that you get to meet fascinating people and become involved in situations that cause you to learn and grow every day.

Russell is a training analyst at Russell Martin & Associates in Fishers, Ind.

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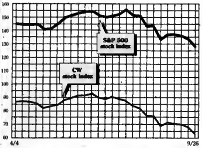

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Semiconductors	44.3	41.9
Peripherals & Subsystems	73.5	67.9
Leasing Companies	54.4	48.7
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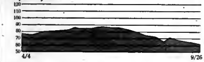
Communications

Computer Systems



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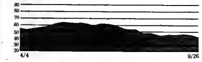

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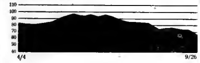

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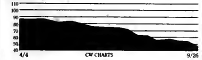

CW CHARTS

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, SEPT. 26, 1990

Communications and Network Services

EXCH		52-WEEK RANGE		PRICE CLOSE SEPT 26, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMERICAN INFO TECHS CORP	68	53	59.75	-0.8	-1.0
Q	ANDREW CORP	26	16	17.75	-0.3	-1.4
Q	ARTEL COMM CORP	10	3	2.75	-0.4	-12.0
N	AT&T	47	30	31.5	0.6	2.0
Q	AVANTEK INC	6	2	2.563	0.0	0.0
N	AYDIN CORP	21	11	10.75	0.0	0.0
N	BELL ATLANTIC CORP	57	40	46	0.6	1.4
N	BELLSOUTH CORP	58	49	51.625	0.3	0.5
Q	COMPRESSION LABS INC	19	7	13.125	-0.1	-0.9
Q	CONTEL CORP	37	23	30.875	0.9	2.9
Q	DATA SWITCH CORP	4	2	3.25	-0.8	-13.3
Q	DIGITAL COMM ASSOC	27	15	15.25	-0.6	-3.9
Q	DYNATECH CORP	20	14	13.75	-1.8	-11.3
Q	FIBRONICS INTNL INC	13	5	7.625	-1.0	-11.6
Q	GANDALF TECHNOLOGIES	9	2	2.913	-0.3	-8.3
N	GENERAL DATACOMM INDS	6	2	2.375	0.0	0.0
N	GTE CORP	26	24	26.125	0.9	2.9
Q	INFOTRON SYS CORP	10	2	2.125	-0.4	-18.0
N	ITT CORP	64	47	46.625	-3.9	-7.1
N	M A COM INC	7	6	4.625	0.5	12.1
Q	MCI COMMUNICATIONS CORP	49	30	32	0.1	0.4
N	NETWORK EQUIP TECH INC	34	6	6.125	-0.3	-3.9
Q	NETWORK SYS CORP	15	7	6	0.3	2.9
N	NORTHERN TELECOM LTD	30	21	22.625	-0.8	-3.3
Q	NOVELL INC	29	12	25.25	-1.1	-4.3
N	NYNEX CORP	92	68	69.5	-2.3	-3.1
N	PACIFIC TELESIS GROUP	52	36	43.25	1.5	3.9
S	PENRIL CORP	9	5	5	-0.1	-2.0
N	SCIENTIFIC ATLANTA INC	29	13	13.625	-1.1	-7.6
N	SOUTHWESTERN BELL CORP	65	47	50.625	1.8	3.6
Q	3 COM CORP	16	7	7	-0.8	-9.7
N	U S WEST INC	41	32	33.75	-0.8	-2.3

Computer Systems

EXCH		52-WEEK RANGE		PRICE CLOSE SEPT 26, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ALLIANT COMPUTER SYS	6	2	2.6	-0.1	-4.8
Q	ALPHA MICROSYSTEMS	7	2	1.75	-0.1	-6.7
A	AMDAHL CORP	19	11	11	-1.1	-9.3
Q	APPLE COMPUTER INC	50	29	29.75	-2.8	-8.5
Q	AST RESH INC	26	6	17.625	-2.0	-10.2
N	BOLT BERANEK & NEWMAN	6	4	4.875	-0.6	-11.4
N	COMPAQ COMPUTER CORP	66	37	40.5	-3.6	-8.7
N	COMMODORE INTNL	12	6	6	0.0	0.0
Q	COMPUTER AUTOMATION INC	6	0	0.5	0.2	77.3
N	CONTROL DATA CORP	22	10	10	-0.6	-5.9
N	CRAY RESH INC	61	25	29	-5.8	-16.5
N	DATA GEN CORP	16	5	6.25	-1.5	-22.2
N	DATAPOINT CORP	9	1	0.875	-0.1	-12.5
Q	DELL COMPUTER CORP	14	5	9.625	-1.3	-11.6
N	DIGITAL EQUIP CORP	95	50	51	-4.6	-8.3
N	FLOATING POINT SYS INC	4	0	1.625	0.1	8.3
N	HARRIS CORP	40	21	21	-3.6	-14.7
N	HEWLETT PACKARD CO	52	30	30.5	-3.0	-9.0
N	HONEYWELL INC	112	73	83.625	-8.5	-9.2
N	IBM	123	93	105.375	-3.0	2.8
Q	INFORMATION INTL INC	15	5	6.125	-0.9	-8.8
Q	IPL SYS INC	14	6	9.25	-0.3	-2.8
N	MAI BASIC FOUR INC	6	2	1.625	-0.3	-19.2
N	MATSUSHITA ELEC INDL LTD	172	116	116	-4.8	-3.9
Q	MENTOR GRAPHICS CORP	26	11	12.25	-0.3	-2.0
N	NBI INC	2	0	0.141	0.0	-16.0
N	NCR CORP	72	65	55.375	-3.3	-5.5
Q	PYRAMID TECHNOLOGY	35	13	19	-0.4	-2.0
Q	SEQUENT COMP SYS INC	34	15	20	-2.8	-12.1
Q	SUN MICROSYSTEM INC	37	16	27.75	-1.5	-5.5
Q	SYMBOLICS INC	2	0	0.313	-0.1	-26.5
N	TANDEM COMPUTERS INC	30	10	10.875	-0.6	-5.4
N	TANDY CORP	46	25	24.875	-1.3	-4.8
N	ULTIMATE CORP	10	4	4	-1.0	-20.0
N	UNISYS CORP	20	7	1	0.0	0.0
S	WANG LABS INC	6	3	3	-0.4	-11.1

Software & DP Services

EXCH		52-WEEK RANGE		PRICE CLOSE SEPT 26, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	AMERICAN MGMT SYS INC	20	11	12.5	-0.8	-3.9
Q	AMERICAN SOFTWARE INC	16	6	7.875	-1.0	-11.3
N	ANACOMP INC	5	2	2	-0.6	-11.1
Q	ANALYSTS INTL CORP	24	10	11	-1.3	-10.2
Q	ASHTON TATE	15	6	6.25	-1.5	-19.4
Q	ASK COMPUTER SYS INC	10	7	7.125	-0.5	-6.8
N	AUTO DATA PROCESSING	60	44	46.625	0.8	1.8
Q	AUTODESK INC	60	33	42.25	-3.5	-7.7
Q	BMC SOFTWARE INC	30	14	23.25	-0.5	-2.1
N	BUSINESSLAND INC	14	2	2	-0.4	-15.8
Q	COGNOS INC	10	4	7	-0.6	-8.2
N	COMPUTER ASSOC INTL INC	17	4	6.625	-0.4	-6.3
Q	COMPUTER HORIZONS CORP	17	7	11.75	-2.8	-19.0
N	COMPUTER SCIENCES CORP	69	37	37.75	-0.1	-0.3
N	COMPUTER TASK GROUP INC	12	6	8.5	0.0	0.0
Q	COMSHARE INC	25	14	16	0.0	0.0
Q	CORPORATE SOFTWARE	16	6	6.8	-2.0	-17.4
N	GENERAL MTRS (CLS E)	28	26	32.875	-1.8	-5.4
Q	GOAL SYSTEMS INTL	16	10	10	-1.3	-11.1
Q	HOGAN SYS INC	7	2	2.75	0.0	0.0
Q	INFORMIX CORP	19	5	5.5	-0.4	-6.4
Q	INTELLICORP INC	8	3	2.5	-0.5	-12.5
Q	LEGENT CORP	32	16	16	-1.0	-6.0
Q	LOTUS DEV CORP	39	14	15.625	0.9	5.9
Q	MICROSOFT CORP	61	33	60.25	-1.8	-2.8
Q	NATIONAL DATA CORP	25	8	9.875	-0.5	-4.8
N	ON LINE SOFTWARE INTL INC	11	6	5.875	-0.1	-2.1
Q	ORACLE SYS CORP	168	6	6.25	-1.0	-13.8
N	PANSOPHIC SYS INC	19	10	10	-1.4	-12.1
Q	PHOENIX TECHNOLOGIES INC	5	2	2.375	-0.1	-5.0
N	POLICY MGMT SYS CORP	43	30	35.625	-2.1	-5.6
Q	PROGRAMMING & SYS INC	25	14	15.5	0.1	0.8
Q	RELATIONAL TECH INC	15	3	8.375	-0.6	-6.2
N	REYNOLDS & REYNOLDS CO	27	13	16	-1.1	-6.0
Q	SAGE SOFTWARE INC	16	8	9.125	-1.0	-9.9
Q	SEI CORP	22	15	15	-1.4	-8.4
Q	SHARED MED SYS CORP	17	12	16.25	2.3	16.1
Q	SOFTWARE PUBG CORP	29	14	21.25	-0.8	-3.4
N	STERLING SOFTWARE INC	11	6	6	-0.6	-12.1
Q	SUNGARD DATA SYS INC	28	16	16.75	-0.5	-3.1
N	SYSTEM CENTER INC	25	6	6	-2.1	-26.2
N	SYS. SOFT INC	25	16	16.75	-3.3	-16.3
Q	WORDSTAR	2	1	0.938	-0.1	-6.2

Semiconductors

EXCH		52-WEEK RANGE		PRICE CLOSE SEPT 26, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADV MICRO DEVICES INC	11	6	5.375	-0.4	-6.5
N	ANALOG DEVICES INC	10	6	6.125	-0.3	-3.9
Q	ANALOGIC CORP	11	8	6.375	-0.4	-3.6
Q	CHIPS & TECHNOLOGIES INC	26	10	10.125	-0.9	-8.0
Q	INTEL CORP	52	30	32.75	-1.1	-3.3
Q	MICRON TECHNOLOGY INC	16	7	5.5	0.4	4.6
N	MOTOROLA INC	88	53	60.625	-0.4	-0.6
N	NATL SEMICONDUCTOR	6	4	4.125	-0.6	-13.2
N	TEXAS INSTRS INC	44	25	26.625	-2.0	-7.0
S	WESTERN DIGITAL CORP	16	6	6.125	-1.5	-19.7

Peripherals

EXCH		52-WEEK RANGE		PRICE CLOSE SEPT 26, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Q	ALLOY COMP	2	0	0.5	0.1	14.2
N	AM INTL INC	6	1	1.25	-0.1	-9.1
Q	AUTO TROL TECH CORP	6	2	1.75	-0.5	-22.2
Q	BANCTEC INC	24	13	16	-2.6	-16.1
A	COGNITRONICS CORP	6	5	4.375	-0.5	-10.3
Q	CONNER PERIPHERALS	61	11	17.5	-4.1	-16.1
A	DATARAM CORP	22	6	10.063	-1.7	-14.4
N	EASTMAN KODAK CO	48	36	38.125	-3.0	-7.1
N	E M C CORP MASS	7	3	6.375	0.4	6.3
Q	EMULEX CORP	6	4	6.5	0.0	0.5
Q	EVANS & SUTHERLAND	35	18	22.5	-3.6	-10.9
Q	ICOT CORP	2	1	0.657	0.0	6.1
Q	INTERLEAF INC	6	5	2.875	-0.3	-8.0
Q	IOMEGA CORP	6	3	4.438	-0.6	-11.2
Q	MASSTOR SYS CORP	6	1	0.563	-0.2	-24.9
Q	MAXTOR CORP	17	6	9	-0.3	-4.0
Q	MICROPOLIS CORP	10	3	5	0.0	0.5
N	MINNESOTA MNG & MFG CO	61	66	78	-1.5	-1.6
Q	PERSONAL COMP PRODUCTS INC	6	4	3.918	-0.2	-4.7
Q	PRINTRONIX INC	15	9	9.5	-0.3	-2.6
N	QMS INC	21	6	10.75	-1.8	-14.9
Q	QUANTUM CORP	26	9	17.125	-0.3	-1.4
N	RECOGNITION EQUIP INC	9	4	5	-0.1	-2.8
Q	REXON INC	16	4	4.625	-0.1	-3.6
Q	SEAGATE TECHNOLOGY	30	6	6.875	-1.4	-16.7
N	STORAGE TECH CORP	39	12	13.625	-2.8	-16.2
Q	TANDON CORP	4	1	1.563	-0.4	-21.8
N	TEKTRONIX INC	20	12	13.75	-0.3	-1.8
Q	TELEVIDEO SYS INC	1	0	0.25	0.0	-11.0
N	XEROX CORP	67	22	32.625	-5.1	-13.6

Leasing Companies

EXCH		52-WEEK RANGE		PRICE CLOSE SEPT 26, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
N	CAPITAL ASSOC INTNL INC	7	1	1	-0.2	-20.0
N	COMDISCO INC	34	15	15.125	-1.6	-9.7
Q	LDI CORPORATION	18	12	11.75	-0.8	-6.0
Q	PHOENIX AMERN INC	5	6	3.25	-0.3	-7.1
Q	SELECTERM INC	6	3	2.875	-0.4	-12.2

EXCH: N=NEW YORK; A=AMERICAN; Q=NATIONAL

Care bears

Economic concerns keep tech stocks on a downward trend

When the worry meter soars, stock prices sink. As the Dow Jones industrial average and other economic indicators spiraled further downward, "to sell or not to sell" was not a question over which investors labored long last week. Several technology firms hit new lows, including Amdahl Corp., which dropped 1⅛ points last week to close Thursday at 10⅞.

Data General Corp. and Digital Equipment Corp. also sank to new depths. DEC was down 1⅞ points to 51 by Thursday, while DG closed at 4⅞, down 1⅜ points for the week.

The makers of big machines were not lonely at the bottom. National Semiconductor Corp. fell ½ a point to close Thursday at a new low of 4⅛, and LSI Logic, Inc. found its way to a new low of 5⅝ after losing ⅜ of a point.

Other losers were Apple Computer, Inc., which slid 3¼ points to 28¼, Sun Microsystems, Inc., which lost 2⅝ points to 25¾, and IBM, which fell 2⅝ points to 104⅜.

The hardware arena may have been hit hard, but software did not escape unscathed. Oracle Systems Corp. officially issued its first quarter financials midweek, showing negative numbers in the net income column despite revenue gains. Oracle shares fell 1⅜ points to 5⅜ in response. Both Microsoft Corp. and Ashton-Tate Corp. slipped 1¼ points to 59¼ and 5⅝, respectively. Novell, Inc. slid ¼ of a point to 23¼.

Although some software issues were down, Borland International broke away from the pack and soared 1⅛ points to close Thursday at 18⅛. Also on the upswing was Computer Associates International, Inc., which gained ⅛ of a point to close at 5⅛. Lotus Development Corp. edged up ¼ of a point to 15¼.

Elsewhere, Conner Peripherals, Inc. took a 4½-point step backward to 16¼.

KIM S. NASH

Info systems uber Deutschland

West German firms look to IS for an edge in the race to grab market share

BY PATRICIA KEEFE
CW STAFF

BERLIN — There's no rest for the weary. This week's reunification will turn loose a Germany with an attention span split between the old and the new. Over the next 18 months, Germany will be forced to divide its resources between rushing what was East Germany into the 20th century and gearing up to compete in the no-holds-barred 1992 opening of the European Common Market.

While West German companies are under pressure to implement technology that will ensure a competitive edge in a liberated international sphere, many are also contemplating expansion into a market estimated to be anywhere from 10 to 20 years behind the West technologically. German analysts and other observers seem convinced that information technology will prove a critical factor in achieving success at both ends of the spectrum.

East meets West

East Germany's economy is dwarfed by West Germany's

	West Germany	East Germany
Population	62.2M	16.6M
Gross National Product	$1,199.4B	$191.1B
Imports from U.S.	$20.3B	$138.7M
Exports to U.S.	$24.8B	$93.9M

Source: U.S. Dept. of Commerce — CW Chart: Chuck Fletcher

Information systems will be "absolutely key" to resolving these problems and keeping Germany in top competitive form, said Helmut Gumbel, director of technical support at Gartner Group Europe in Munich, West Germany. "Any expansion into the East will have to be done hand-in-hand with information systems," agreed Patrick L. Springer, director of industry services at a division of Computer Task Group.

That may increase the prominence, if not the budgets, of IS departments in many West German corporations. "That's because this has got to be done very quickly," pointed out Ivan Kalman, president of Kalman Consulting in Neu-Isenburg, West Germany. This is particularly true for the banking industry, where market share is the goal for 1992. "Whoever is able to corner that market quickest will dominate it," Kalman explained.

Springer, who did some research for a number of West German firms looking to expand in the East, added, "We found the infrastructure in East Germany was so dissimilar and so outdated that literally there is nothing there to buy from the standpoint of an IS system." In short, IS will have to build from the ground up, even if the company buys an existing enterprise. Many East German firms relied on a government-run centralised data processing service that has since disintegrated.

Starting from scratch carries an unexpected bonus. Many West German firms plan to replicate their sites in the East, typically with older equipment they already own. This in turn may provide the excuse West German sites need to move aggressively into updating their shops. Analysts and users said it is already happening. "The secondhand market is flourishing here," Kalman said. This movement is expected to pump up hardware sales in Germany.

However, there is the danger that IS management will be diverted from implementing long-term strategic projects. "There is no question [that will happen]," said Kirtland Mead, a vice-president at the London branch of consulting firm Index Group, Inc.

Just how heavily IS departments will be affected depends greatly on two factors: the business and the extent to which it relies on automation and the company's strategy for exploiting the newly freed East German market and its work force.

Most Germans warned against expecting an explosion of activity in the Eastern sector, suggesting it may take up to two years before Western businesses move seriously into the East. "You see, it will not all happen with a big bang on Oct. 3," noted a spokesman for BMW in Munich.

German businesses are already tempering their euphoria when it comes to tapping the market potential of their cousins in the East. Cost-conscious outfits may opt to service and supply the East from the safety of their amortized Western facilities, Mead said.

True, many Germans will say it is their duty to repatriate the East — the West German constitution actually requires the pursuit of reunification — but they are not blind to the obstacles barring the door. These obstacles are many, and in some cases, mighty:

- A virtually inoperative telephone system (see story this page).
- A technological and internal infrastructure on par with the Third World.
- Uncertainty about property rights issues.
- A population described by one analyst as socialized since birth not to be productive, ignorant of the profit motive and well-educated in nearly every aspect except computers.
- Severe pollution.

Through the wall

Looking through the yawning hole that was once the Berlin Wall, German businesses and their IS shops cannot help but see both opportunities and nightmares unfolding before their eyes.

Overnight, reunification has transformed East Germany from the best of the worst — that is, Eastern Bloc countries — to the worst of the best, or the West, said Frank Daubeck, a consultant and president of Communications Network Architects, Inc. in Washington, D.C., who has traveled extensively in Europe.

Noting that Daimler-Benz AG plans to modernize an "old-fashioned" tool parts factory, a spokeswoman said that the company was still researching the issue and that it was too early to assess its affect on the IS department.

Besides the computer and software vendors, the more adventurous companies are those providing basic services, such as banking and insurance, and government agencies. The possible transfer of the German capital from Bonn to Berlin, for example, would result in a massive relocation of computer equipment between the two cities if Berlin succeeds in convincing government agencies to transfer facilities as well.

Banking giant Deutschesbank said it expects to spend $500 million to open 250 branches in the East. It has already opened some branches, enticing skilled employees to move East with higher pay and housing allowances. Electronic data will be moved across the border in one of two ways: either via "sneaker" or "rubber" net, or by bouncing it off satellite links to very small-aperture terminals in the West, Gumbel said.

As for software, Hans Schlegel, president of Biel, Switzerland-based SAP International, recently suggested that, "East Germans can leapfrog over the last 15 years of software development" by purchasing off-the-shelf software.

"They are desperate not only for computer equipment but for a kind of embedded knowledge in software," said Esther Dyson, editor of the "Release 1.0" newsletter. Of particular value to Eastern Europe, she said, is software capable of managing business procedures.

It will be necessary to bring East Germany technologically up to speed as quickly as possible, so analysts said they expect a boom in shrink-wrapped software sales and the installation of local-area networks.

The maturation of LAN technology will give East Germany the advantage of skipping a couple of steps in the computerization life-cycle.

In addition, West German IS shops have tended to take more of a systems approach to solving their problems as opposed to the islands of computing still found in the U.S., said Guy Daniello, president and chief executive officer at Datamedia Corp. in Nashua, N.H.

Germans

FROM PAGE 1

Western enterprises seeking to expand their operations into the virgin East. It is especially troublesome for heavily automated operations such as the data-intensive banking, insurance and retail sectors (see story this page).

Not surprisingly, overhauling East Germany's telecommunications infrastructure is a top priority — both for business and the government.

Quick on the draw, Deutsche Bundespost, the West German government monopoly that operates and controls both the telephone and postal services, has already outlined Telecom 2000, a glass-fiber-studded, seven-year reconstruction plan.

"When we are done, the East German telephone network will be the most modern in the world," said Michael Behr, a spokesman at Bundesposte's Telecom Regional Directory.

In the meantime, Bundespost is offering Western businesses the option of bypassing the East German telephone system in favor of satellite communications.

Bayerische Vereinbanke Group, which plans to open 21 branches in the East, will be relying on that option, a spokesman said.

Primarily targeted at data transmission, Behr said that those users who have to wait longer than a short period for a telephone connection in East Germany will have use of the satellite for voice transmission as well. "This is extraordinary for Germany," he said.

Under Telekom 2000, Bundespost will replace the East German postal and telecommunications services with a 35-billion deutsche mark digital telephone network and a data and mobile radio network estimated to cost another 20 billion marks. The cellular system is scheduled to be installed by the end of 1991.

Over the next seven years, additional connections are slated to be provided: 100,000 in 1990, including 30,000 digital channels by the third quarter; 300,000 in 1991; 500,000 in 1992; 800,000 in 1993; and a total of 5.5 million from 1994 to 1997. A mix of coaxial and fiber-optic cable will be used; glass fiber cable is slated for Berlin.

Space race

The poor quality of East Germany's telephone system forces communications agency Deutsche Bundespost to install satellite networks for data and voice transmission

Source: Deutsche Bundespost — CW Chart: Marie Hanes

A long way to go

East Germany's technological infrastructure at a glance:

- **A 1970s data processing infrastructure standardized on 1960s-era IBM 360 mainframes. As of January 1990, these were an estimated 400 mainframes with processing power that together totaled only 600 MIPS.**
- **Centralized approach to data processing.**
- **An estimated 100,000 personal computers, comprising a mix of Intel Corp. and knockoff chip-based 8088s, 80286s and a few 80386s running MS-DOS and MS-DOS clones.**
- **Limited applications; no applications development tools or fourth-generation languages.**
- **Antiquated analog telephone systems dating back to at least the 1940s.**
- **Data transmission speed limited to 1,200 bit/sec.**

Computer firms set to unite

Siemens and Nixdorf combined effort has good shot at world-class clout

BY NELL MARGOLIS
CW STAFF

Given half a chance, almost all merging companies would claim that their union is a world-shaking event. In the case of West Germany's Siemens AG and Nixdorf AG, it may be.

Today, Siemens, the 145-year-old Munich, West Germany-based electronics giant, formally weds Nixdorf, the entrepreneurial computer firm based in Paderborn, West Germany, whose 30-year skyrocket crashed in a sea of red ink in the quickly shifting computer market of the past several years. The former competitors join to become Siemens Nixdorf Informationssysteme AG: a firm with combined worth estimated at $61.1 billion and a range of product offerings that blanket the information technology territory.

The company hopes to leverage its newly combined clout into world-class player status by the end of the decade. Most analysts said they believe the firm can do it.

Siemens' Decker: *Reunification a surprise*

"This is the one European player that stands to make it," said Martin Hingley, an analyst at International Data Corp./Europe.

In both the corporate and geographical sense of the phrase, "this is a particularly well-placed company," said Gordon Muir-Carby, an analyst at Muir-Carby Boettkjaer Ltd. Both the Nixdorf acquisition — a triple play in which Siemens removed an aggressive competitor, expanded its own might and emerged a hero by saving a popular but foundering company from virtually certain failure — and Siemens' early moves into the emerging East German market "were particularly well thought-out," Muir-Carby said.

The merger occurs on the dawn of unification for the two Germanys after a 45-year schism (see story page 130). Siemens has wasted no time in making clear its commitment to the unification effort. In June, the firm announced plans to invest some $600 million in East Germany during the next several years, funding technology projects that could open up 25,000 to 30,000 jobs.

The coincidence of the two events is staggering, even to Siemens executives. "If you had asked me six months ago if [unification] could happen, I would have said, 'Not so fast,'" said Hans Decker, chief executive officer of New York-based Siemens Corp., the firm's approximately $4 billion U.S. subsidiary. "If you had asked me a year ago, I would have said 'never.'"

Analysts pointed to a panoply of recent moves as signs that both firms arrived at merger point in maximal fighting trim for taking on the world market: Nixdorf's recent 3,500-person work force reduction, for instance, and Siemens' decentralization and subsequent spate of acquisitions and alliances (see story below).

In addition, they said, the company will be able to draw on a wealth of advantages, including the following:

- Wealth itself. Siemens logged $848 million in profit on worldwide sales of $33 billion last year, and analysts said they expect to see growth when the firm announces its numbers for the 1990 fiscal year ended yesterday.
- A huge work force, in the 350,000-person ballpark.
- A particularly broad earnings base, spanning a spectrum of technologies from medical to automotive to nuclear. The spread could serve to cushion the firm's computer-related endeavors from the shocks suffered by any one industrial sector, noted Estela Piscope, an analyst at BHF Securities in New York.

This is a luxury not shared by major U.S. technology market players — even those as relatively diverse as IBM — whose financial fortunes rise and fall with the worldwide computer industry, and it puts Siemens on a more competitive footing with the similarly organized Japanese giants.

None of this is to say that Siemens has a clear path to the front ranks of the world technology industry. One barrier that could prove hard to overcome, some analysts said, are the company's bureaucratic and patriotic roots.

"This is a *very* nationalistic corporation with too much of its overall business based in Germany," Hingley said. "When Siemens bought Nixdorf, one of the advantages it claimed was that Nixdorf was more international than Siemens. That's true — but that's not saying much." Although the rich possibilities of postunification expansion mitigate this weakness in Siemens' global strategy, he said, it remains a potential problem.

Economic gridlock in the U.S. and signs of an impending slowdown in Europe as well will not roll back for Siemens Nixdorf, and the further the firm ventures into the global fray, the more cutthroat the competition it faces will be.

Moreover, Hingley noted, despite protestations by executives from both sides, questions remain as to whether the supercorporate Siemens and the free-wheeling Nixdorf will be able to make the match work.

Tenuous rank

The Siemens-Nixdorf merger ranks the firm second in estimated West Europe computer sales, although DEC is rapidly catching up

Revenue (in millions)		Growth	
[illegible]	$30,[illegible]	[illegible]	$31,[illegible]
Siemens	$5,441	5%	$5,713
(Nixdorf)	$2,830	1%	$2,870
[illegible]	$4,[illegible]	[illegible]	$4,[illegible]
[illegible]	$4,[illegible]	[illegible]	$4,[illegible]
[illegible] Bull	$4,[illegible]	[illegible]	$4,[illegible]
[illegible]	$2,[illegible]	[illegible]	$2,[illegible]
[illegible]-Packard	$2,[illegible]	[illegible]	$2,[illegible]
[illegible]	$2,[illegible]	[illegible]	$2,[illegible]
[illegible]	$1,[illegible]	[illegible]	$1,[illegible]

Source: International Data Corp. CW Chart: Chuck Fletcher

Time will tell in Siemens, Nixdorf merger

When Siemens and Nixdorf announced their impending union last winter, two questions sounded from the user community:

- Will customer support erode as Siemens and Nixdorf, widely viewed as icons of bureaucracy and entrepreneurialism, respectively, engage in a struggle for corporate dominance?
- Which of whose product offerings will survive? Not surprisingly, concern centered on the smaller, newer, financially impaired Nixdorf as the probable loser in a battle of wills.

The questions are still there, and despite protestations of good faith from executives in both camps, the frustrating answer is that only time will tell. In the hours before the merger vested, however, most appeared willing to just reserve judgment.

"Sure, we've talked about the merger, but it's no big deal," said Devera Clayton, operations supervisor at Dresser Industries, Inc. in Houston. Nixdorf's Targon is Dresser's data processing platform. "I don't think [the merger] will really affect us very much," Clayton said.

Charles Mitchell, vice-president of information services at Nordstrom, Inc., said that he has seen an effect — "and so far, it's been nothing but positive." The 61-store Seattle-based department store chain bought Nixdorf point-of-sale systems on an eight-store experimental basis two years ago, Mitchell said. Nixdorf is now in 25 Nordstrom locations and counting.

"One of the reasons Nixdorf got the nod was its people and its customer orientation," Mitchell said. "The problems over the past couple of years clouded whether that would continue." The impending Siemens acquisition, he said, "seems to have given [Nixdorf] the confidence that they needed to continue as they were."

Siemens' Holler *feels good about merger*

Other users voiced variations on Clayton's and Mitchell's themes. Albert Holler, chief executive officer at Burlington, Mass.-based Siemens Nixdorf Information Systems, Inc., said their optimism will prove justified. "Our objectives are the same [as they were before the merger]: to address quite distinct niche markets with complete solutions instead of just hardware and to get, if anything, closer to the customer."

It might not be that easy. Hans Decker, chief executive officer of Siemens Corp., the holding company for Siemens' U.S. operations, echoed Holler's assurances that all major product lines of both companies would be continued and supported, as the firm moves toward a co-developed line of products to which all customers will be offered affordable and easy migration paths. However, he implied, Nixdorf-style TLC is no sure thing. "If cost were not a factor, extreme customization would survive."

NELL MARGOLIS

Siemens shopping its way to the top

Siemens' claims to have cast off a century's worth of bureaucratic chains in search of 1990s-style global dynamism have roused a rare degree of credibility — largely because the company has put a rare amount of money — and action — where its mouth is.

In the past two years, Siemens — anything but a power shopper before 1989 — has been on an acquisition and alliance binge:

- 1988 — Siemens acquired certain divisions of telecommunications vendor Rolm Co. from IBM; Siemens and IBM also teamed up on a Rolm distribution company.
- 1988 — Siemens bought Bendix Electronics Group from Allied Signal Corp. for a reported $250 million.
- 1989 — Siemens joined with General Electric Co.'s British subsidiary to mount a successful hostile takeover of UK-based electronics and telecommunications provider Plessey Co.
- 1989 — Siemens acquired a majority of the stock of France-based computer vendor IN2 S.A.
- 1989 — Siemens and Frantome S.A. in France entered a joint marketing agreement to sell water pressure-driven nuclear reactors.
- 1990 — Siemens acquired a controlling stake in Nixdorf.
- 1990 — Siemens and IBM teamed up again, this time to co-develop a 64M-bit chip — by a large margin, the densest memory chip yet promised by the manufacturer.

Both companies reported last week that the project is on track. Production is targeted at mid-1995.

NELL MARGOLIS

NEWS SHORTS

Merger reports quashed

Rumors were flying last week about a possible merger between two Massachusetts-based midrange computer vendors. According to unidentified sources cited in news reports, Wang Laboratories, Inc. in Lowell, and Data General Corp. in Westboro were considering a merger. Christopher W. Mines, an analyst at Cowen & Co. in Boston, noted that although both companies are in "dire straits" and may be willing to consider any and all options, it seems highly unlikely that they would want to "muck up the works by combining forces." DG issued a statement saying there was no truth to the report. Wang said it does not comment on rumors.

Microsoft will unite applications

Microsoft Corp. will announce today the availability of The Microsoft Office for Windows, a packaging of its three most popular business applications for use under the Windows Version 3.0 graphical environment. The bundling includes the Excel spreadsheet as well as the Microsoft Word word processor and its Powerpoint presentation graphics program. The product is available immediately and costs $995.

NEC to use Stratus technology

Stratus Computer, Inc. announced an agreement last week giving NEC Corp. nonexclusive rights to sell Stratus' Unix-based fault-tolerant computers on a worldwide basis. The agreement allows NEC to sell Stratus' upcoming reduced instruction set computing (RISC) workstations, scheduled to debut in the fall of 1991. The RISC machines will run Stratus' FTX version of AT&T Unix System V but will carry an NEC label.

Software firm outsources

Group 1 Software, Inc., a Greenbelt, Md.-based vendor of software for the direct marketing industry and volume mailers, has signed an outsourcing contract with Computer Network Systems, Inc. in Washington, D.C. Under the "multiyear, multimillion dollar" deal, the contractor will provide a nationwide network and data center for the development, maintenance and distribution of Group 1's software products.

Researchers merge

The prestigious National Research Council, based in Washington, D.C., merged two of its high-tech research boards last week to form the Computer Science and Telecommunications Board. The panel, chaired by Joseph F. Traub at Columbia University, is studying such issues as the competitiveness of the U.S. computer industry and computer security.

Visa revamping global network

Visa International, Inc. has begun a worldwide restructuring of its processing technology and network architecture to support increased transaction volume and new services. The revamped network will include four "Supercenters," containing IBM 3090 mainframes linked by a T1 backbone. In addition, a rewrite of the company's core business software aims to expand services into payment markets now dominated by cash and check transactions, including the fast-food, travel and health care industries. The new architecture is expected to save Visa member companies up to $1 billion during the next decade.

Racal Interlan beefs up smart hub

Adding a new dimension to the smart hub approach to corporate cabling, Racal Interlan, Inc. has announced an integrated local-area network platform that includes a built-in asynchronous terminal server that speaks both Digital Equipment Corp.'s Local Area Transport terminal server protocol and the widespread Transmission Control Protocol/Internet Protocol. The hub also reportedly supports 10Base-T (Ethernet LANs running over unshielded twisted-pair wiring) and Simple Network Management Protocol, a de facto network management standard, and the vendor said token-ring support is in the works.

CA relents on CA-7 scheduler support

BY JOHANNA AMBROSIO
CW STAFF

GARDEN CITY, N.Y. — Computer Associates International, Inc. has apparently given in to users' demands to continue support for an older version of its CA-7 scheduling product.

The issue concerns Version 2.83 of CA-7, which was introduced in January 1988. Version 2.9, introduced in April 1989, is the most current version of the product. However, about half of the CA-7 user base is still using Version 2.83.

According to letters that CA reportedly began mailing to users several months ago, the company said it was dropping support for the older version in early September. The date was then moved to early this month. However, because users complained to CA at the systems software users group meeting in August, support has now been extended to at least March 30, 1991.

Mark Wasilko, CA's senior vice-president of marketing, acknowledged the letters' existence but insisted they were intended only to "clarify" CA's support stance for Version 2.83. Furthermore, he said, "We will always support 2.83, just like we support any other product. As of now, it's stabilized, and we are no longer enhancing it. But the support is there."

However, at least one user said that support for 2.83 was forthcoming only after a series of meetings he had with CA managers.

Sean Blessing, systems designer at Cigna Corp.'s operations group in Windsor, Conn., said that support is "very important" to him. "We never upgraded to 2.9 because it didn't have any value for us," Blessing said. "We've been waiting for Version 3.0 and now that's been delayed until next year. So it's very important to us that they continue to support 2.83, and now, we've got that support."

Delays, delays

Users said that Version 3.0, originally promised for general availability by the end of this month, is now slated to be delivered in the first quarter of next year. "CA was still looking for beta-test sites for 3.0 at the user group meeting," Blessing said, "so I doubt it will come out anytime soon."

Wasilko said that Version 3.0 is on schedule for the first quarter, as promised by the company in a position paper last year.

Some users said the change of status for 2.83 is not really of concern. "My experience with CA is that even if you're not current, they will still support you," said Deidrich Towne, a technical analyst at Niagara Mohawk Power Corp. in Syracuse, N.Y., which is still using Version 2.83. "They may not have a fix for you right away, but they'll answer your questions."

Another problem with Version 2.83 is that it exists in two flavors, basic and full — a leftover from the days when Uccel sold the product before CA acquired it. "CA wants everyone to upgrade to the full product, and users are saying they want CA to make that upgrade a little less painful," said Craig Besand, supervisor of change management at Blue Cross/Blue Shield of Missouri in St. Louis.

However, Wasilko said, CA is charging "basic" 2.83 users $15,000 to upgrade to the full version. "They're entirely different products," Wasilko said. The full version includes features such as dynamic work-load balancing and cross-CPU scheduling, he added.

Some users said the major bugs in Version 2.9 appear to have been fixed. Besand credited CA with working "real hard with us to help solve the problems." He said he would "think a lot harder about being a beta-test site next time."

Windows

FROM PAGE 1

remain limited. "It needs to be cleaned up a lot more before it breaks out into our whole organization," one systems manager said.

The primary complaint is systems overhead. Use Version 3.0 with an Intel Corp. 80386-based personal computer and about 4M bytes of random-access memory or you are wasting your time, users said. "We've tried [Windows] with some of our 286s; you can bring it up but that's about all," Smith said. "It ends up doing so much memory swapping to the disk that the performance [of Windows] becomes unacceptable."

While 386-based PCs are becoming prevalent, many firms have stockpiles of older machines that still provide everyday computational needs. As a result, the sluggish performance Version 3.0 provides on these machines has limited it in some places to leading-edge users.

Operational quirks have also proved irksome. "Every once in a while, we'll get an application that just freezes up, usually during multitasking or when we're switching between applications," a systems analyst said.

Another request: a wider array of applications optimized for the Windows environment. Software developers said their efforts have been slow because of the complexity of the new program. "Developing for Windows 3.0 is a whole new ball game," said Marc Matoza, a senior product manager at Ashton-Tate Corp., which is working on a version of its Dbase database application.

Seeking software

Matoza added that a rich software selection could take a while, probably a year to 18 months. A software program can typically be created in six months to a year.

Despite the quibbles, Version 3.0 is already winning popularity contests among the estimated 50 million DOS users worldwide. Redmond, Wash.-based Microsoft said it has shipped more than 800,000 copies of the application, although this figure includes all units shipped to resellers and does not specify whether the packages are in users' hands or languishing on store shelves.

Especially enthusiastic are those ready to scrap Windows 2.0. "The difference between 2.0 and 3.0 is like night and day," said Laura Hill, vice-president of product management at Information Science, Inc. "It's got better icon presentation, better color and a cleaner look all around."

Hills said her firm will "absolutely" move all their in-house business applications to the 3.0 environment. Currently, Version 3.0 gets a workout in the company's applications development laboratories, where it is widely used in the development of human resources software packages that the Montvale, N.J.-based firm later remarkets.

The splashier presentation has sparked some Unix users to quicken their transition to DOS. "Before [Windows 3.0], I would have needed to be dragged into the DOS world kicking and screaming; I didn't want to learn DOS commands," said Ralph Redfern, a senior technician at AT&T in Denver. "The Windows point-and-click approach is exactly what we need to ease the transition [from Unix]."

The clean and crisp appearance of Version 3.0 has also led some users to defer their buying plans for OS/2, a graphics-filled operating system co-developed by IBM and Microsoft that was originally intended to replace DOS. "Windows 3.0 will be our substitute for going to OS/2," said a director of corporate information in Atlanta.

Trouble is, if such feelings become widespread, it could sour the Microsoft-IBM friendship. Most observers already say that Windows 3.0 will greatly help DOS' longevity because it contains many of the features that were supposed to make OS/2 such a draw.

Budget squeeze on for Fed's IS

BY GARY ANTHES and MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Plans for furloughing more than 1 million federal employees — including thousands of information systems workers — were on the line this past weekend as the Bush administration and congressional Democrats edged closer to an agreement on the federal budget for the fiscal year beginning today.

Regardless of a last-minute compromise, federal IS managers still face significant budget cutbacks because any settlement between the budget negotiators is certain to include tens of billions of dollars in spending cuts for the coming year.

Lawmakers agreed to meet in a session Sunday to pass a stopgap bill that would provide funds until Oct. 20, but President Bush earlier promised to veto such a measure in the absence of an acceptable compromise.

With no temporary funding bill or action to delay implementation of the Gramm-Rudman-Hollings deficit reduction law, at least $85 billion would have to be trimmed from an estimated $149 billion federal deficit for the fiscal year. Federal agencies said their first response to budget cuts ranging from 32% will be to send employees home for unpaid furloughs.

Some federal officials have braced themselves for scenarios in which major computer buys are canceled, critical systems projects are put on hold and computers running noncritical applications are shut down.

Even if the White House and Capitol Hill are able to come to terms, federal IS managers are preparing to tighten their belts: "No matter what agreement is reached, there will be cuts. It will not be business as usual," said Joseph J. Leo, deputy administrator for management at the Food and Nutrition Service of the U.S. Department of Agriculture, where 100,000 employees recently received notices of looming furloughs.

Each agency has come up with its own plan for dealing with the funds freeze that Gramm-Rudman requires. The U.S. Department of Commerce would furlough employees for one day within the first 12 days of October but would stagger the furloughs among the work force to ensure that "critical operations" continue, according to Reed Phillips, director of information resources management.

However, the U.S. Department of Housing and Urban Development (HUD) had plans to shut down the entire agency on particular days. Not only would HUD-operated data centers close on those days, but all computer contractors would also be expected to halt their HUD work, said Donald C. Demitros, director of information policies and systems.

"We'll be OK for the first 15 days, but after that we're going to have to take some drastic measures," such as unplugging equipment, said Conrad M. Newsom, director of the Agriculture Department's computer center in Kansas City, Mo.

If the freeze or sequester lasted longer than 15 days, the data center would have to eliminate one of its three shifts and discontinue use of one of its mainframes in order to reduce hardware and software maintenance costs, Newsom said. The center is one of two that handles processing for the $13 billion food stamp program.

"About 80% of the cost in a major computer center is fixed costs. Only about 20% represents personnel costs. So we could actually get rid of all our people, and we wouldn't even make a dent" in meeting the 32% budget cut, Newsom said.

An official at the Office of Management and Budget (OMB), who asked not to be named, said computer acquisitions and contractor services will get a double whammy as a result of budget cuts or sequesters, because agencies will shift funds from those activities to personnel accounts to minimize layoffs, a shifting technically prohibited by the Gramm-Rudman law. "There will be a lot of that kind of game-playing going on," the official said.

"Regardless of whether there is a sequester, there won't be much money around [for IS] next year," the OMB official added.

In July, the Bush administration released scenarios detailing what could happen in the event of a $100 billion sequester. Among its predictions, OMB said that badly needed systems upgrades at the Internal Revenue Service, Social Security Administration, Federal Aviation Administration and National Weather Service would be canceled or deferred.

Leo said IS officials are probably facing a 10% budget cut even if a deal is struck between Congress and the administration. One result will be that IS officials will postpone computer buys, letting mainframes get closer to capacity before ordering the next system and tweaking the systems to be more efficient. Data centers will also reduce the number of shifts while allowing the turnaround time for batch jobs to increase accordingly, he said.

But Marina Young, president of Information Strategies Group, was less pessimistic. She said spending on IS in the federal government will rise 11% — 7% discounted for inflation — in the fiscal year beginning today. That is based on agencies' own spending projections, an assumption of a brief sequester, if any, and the expectation of a significant tax increase. "After a brief disruption, it will be business as usual," Young said.

Price drop gives X terminals wider appeal to users

BY JOANIE M. WEXLER
CW STAFF

With X terminal vendors butting heads on a playing field that spawned last month's rollout of the first under-$1,000 offering, firms in certain computing environments are finding the products gaining in their cost-cutting appeal.

Analysts predict a shakeout in the overcrowded X terminal market, which has seen dramatic price drops and feature enhancements during the last three years. Firms seeking a combination of centralized processing, workstation ergonomics and X Window System make up the niche, but users and analysts said performance considerations must also factor into cost-per-station evaluations.

Because X terminals do not do local processing, firms considering them should enjoy some surplus of network computing power and run applications that do not require constant processing. Otherwise, they will have to buy additional computing power, which jacks up the per-seat cost.

Also, users and analysts warned, would-be customers should test the products running their own applications to determine performance benchmarks for themselves because vendor performance claims — which are based on a unit of measurement known as an "X stone" — are too general to be meaningful in a firm's unique environment.

X terminals are specifically designed to run X Window, a networking protocol that allows a computer or intelligent terminal to access multiple hosts on a network and display data and applications simultaneously in separate windows on one screen. Currently used mainly in technical applications, the terminals will creep into the commercial marketplace by the end of 1991, according to research firm International Data Corp. in Framingham, Mass.

Recent developments in the X terminal market include the introduction of a $995 monochrome terminal from Visual Technology, Inc.; catch-up color display rollouts from Visual Technology and Human Designed Systems, Inc. (HDS) to compete with market leader Networked Computing Devices, Inc. and the major vendors offering X terminals; and a four-year warranty from HDS.

Major player Digital Equipment Corp. also recently replaced its VT1000, which came with a feeble 1M byte of random-access memory, with its 2M-byte VT1200 and is offering VT1000 users free upgrades. The 1M-byte product "sat around for months gathering dust" at the Dana-Farber Cancer Institute in Boston, according to director of scientific computing Gerald Siddons, because "a 1M-byte terminal is incapable of doing anything."

Siddons, who plans to install about 15 X terminals, said his organization's cost trade-off will be in maintenance savings, compared with what it would have to spend for a Sun Microsystems, Inc. diskless workstation evaluated as an alternative.

"It's easier and cheaper to keep an X terminal running scattered across many networks," he said. The terminals wind up being "less than half the cost of a full-blown workstation" with disk drive.

Louis McDonald, manager of the workstation support group at Aerospace Corp. in El Segundo, Calif., which recently installed three HDS X terminals, said, "We're on a limited budget, and not everybody who likes the look and feel of a workstation needs a CPU on his desk."

Princeton University has found Networked Computing Devices' X terminals to be cost-effective for people using workstations for windowing who mainly want to log onto Princeton's DEC VAX minicomputer, said Stephen Beck, acting systems manager: "For the price, it made sense from a systems administration point of view to use X terminals."

Robert Linden, senior development project engineer at Fischer & Porter Co. in Warminster, Pa., added, "Installing workstations is a tedious business, while the X terminals are brought up right out of the box."

Stephen Auditore, president of X Business Group, a Fremont, Calif., research and consulting firm, said, "The cost of the terminal is not only the cost of the seat, but also how many more [millions of instructions per second] you need on your network to support the X terminals if you don't already have them."

X marks the spot

X Window System display shipments are projected to grow rapidly

Source: International Data Corp. CW Chart: Chuck Fischer

Second-class postage paid at Framingham, Mass., and additional mailing offices.
Computerworld (ISSN 0010-4841) is published weekly, with a single combined issue for the last week in December and the first week in January by CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171.

Computerworld can be purchased on 35 mm microfilm through University Microfilm Int. Periodical Entry Dept., 300 Zeeb Road, Ann Arbor, Mich. 48106. *Computerworld* is indexed: back issues, if available, may be purchased at $2.00 per issue, plus postage. Call (800) 669-1002.

Subscription rates: $2.00 a copy; U.S. — $48 a year; Canada — $110 a year; Central & So. America — $130 (surface), $250.00 (airmail) a year; Europe — $195 a year; all other countries — $295 a year. Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Subscriptions call toll free (800) 669-1002.

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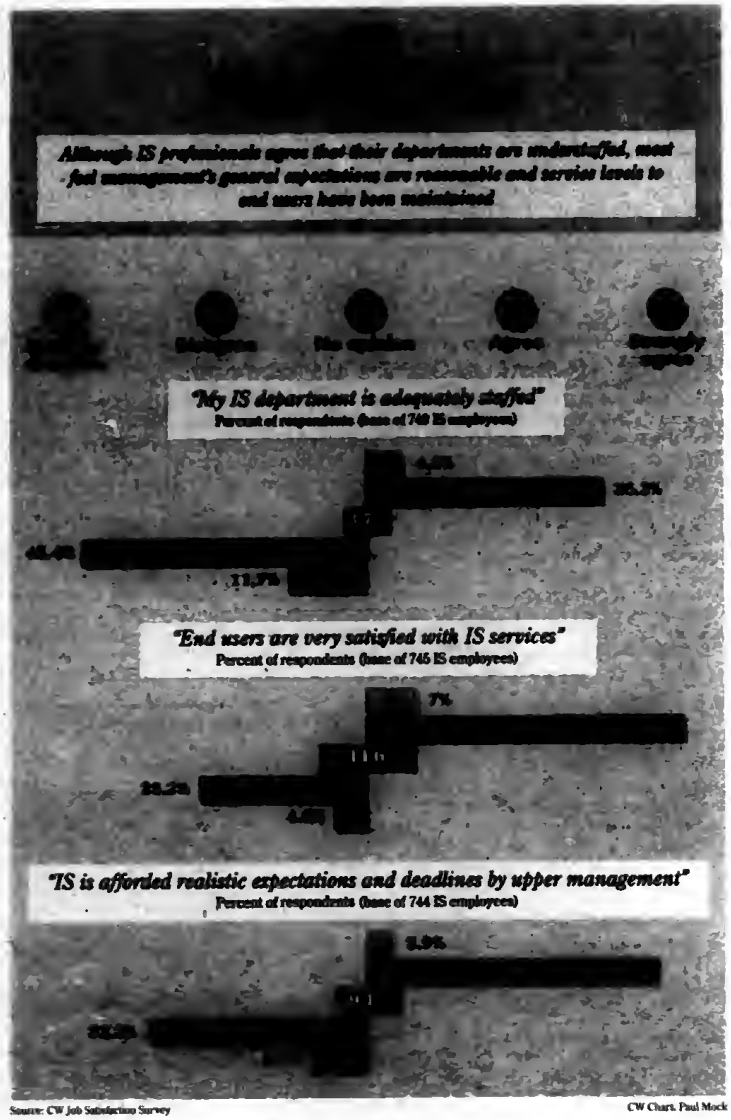

Source: CW Job Satisfaction Survey

CW Chart: Paul Mock

NEXT WEEK

Sears, Roebuck and Co. ▶ is Technology Central, according to **Robert Ferkenhoff**, vice-president of information systems for the retail giant's merchandise group. A six-year plan to revamp virtually all systems is now taking effect — with the goal of reversing the group's declining market share. See a progress report in Manager's Journal.

David Joel

Four hardware architectures. Six operating systems. Has IBM become too splintered? In the 1960s, binary compatibility helped make IBM. In the 1990s, lack of it could spell big trouble. Consolidating operating systems and architectures while focusing on reduced instruction set computing technology is necessary. For an overview, see In Depth.

INSIDE LINES

Another architecture to build on

Unisys is expected today to disclose details of the Unisys Architecture, a 10-year plan integrating its diverse computing platforms around open software architectures for enterprisewide computing. By no means will Unisys abandon its proprietary A series and 2200 series mainframes, according to customers and analysts who have been briefed on the announcements. Instead, Unisys will position the large systems as "information hubs" and increasingly integrate them through the use of common hardware and software, notably fourth-generation languages. The announcement is for Unisys what Systems Application Architecture was for IBM, sources said, with a major difference being an open systems push.

HP's Young not so young anymore

Presiding over Hewlett-Packard in the wake of its poor financial showing and difficulties in keeping Apollo users must be formidable. Insistent rumors of CEO John Young's departure are rife. A task force has convened regarding his successor, but the firm says it's no more than the usual policy as Young inches toward retirement age (he's 58). Young has been a strong political presence chairing many outside organizations but has admittedly left management to his divisional officers. Financial analysts say stronger leadership would have a better chance of getting HP through tough economic times.

Sculley looks to play Japanese card

Apple head John Sculley is hinting that a Japanese "connection" will play a big role in Apple's push toward miniaturization. Sculley won't name names, but a deal could be in the works with Sony, which supplies monitors for the Macintosh. Apple insiders have also confirmed they are talking with Japanese firms about the possibility of building a portable computer.

What a demo!

Oracle's electronic mail package, put to work at last week's Oracle user conference in Anaheim, Calif., as a messaging system, failed to live up to its high-speed billing. After many hours of intensive key-pounding by thousands of attendees, screens froze, and the system crashed. The same thing happened at the 1989 user group meeting in Dallas. After much tinkering, the system, which was powered by Sequent's Balance S 81 processors, was restarted. Then a brief and apologetic electronic note flashed onto users' screens: "We experienced an overload during peak periods when we had 250 concurrent users and were processing about 100,000 transactions per hour. To resolve this overload, we have tuned the database I/Os so that they are spread more evenly across our disks."

Networking breaks out all over

A cab driver tells a story of driving a systems troubleshooter to administer to an ailing Tele-Communications Association '90 network demonstration at the U.S. Sprint booth. The troubleshooter apparently told the driver that he "knew what the problem was," and be'd be back in 10 minutes. Not too surprisingly, the guy did not show up for two hours. Moral of the story: There is no such thing as a simple glitch in a network demonstration.

DEC's latest at the gate

Some customers and industry analysts are convinced that the announcement of the Decsystem 5500 is imminent. The newest member of the RISC Decsystems is reportedly the deskside machine DEC promised last April when it announced a slew of new reduced instruction set computing (RISC) machines. The Decsystem 5500 reportedly runs at 28 million instructions per second, costs somewhere around $50,000 and will be the first RISC machine from DEC that supports DSSI drives.

IBM's memory upgrade policy (see story page 1) confused us and memory board competitors and, at times, seemed to have IBM spokesmen tongue-tied. If you implemented infamous Engineering Change 570, pass on the experience to your peers through us. Contact News Editor Pete Bartolik at (800) 343-6474 or message COMPUTERWORLD *on MCI Mail. We also have a fax for the facts at (508) 875-8931.*

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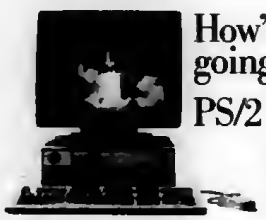

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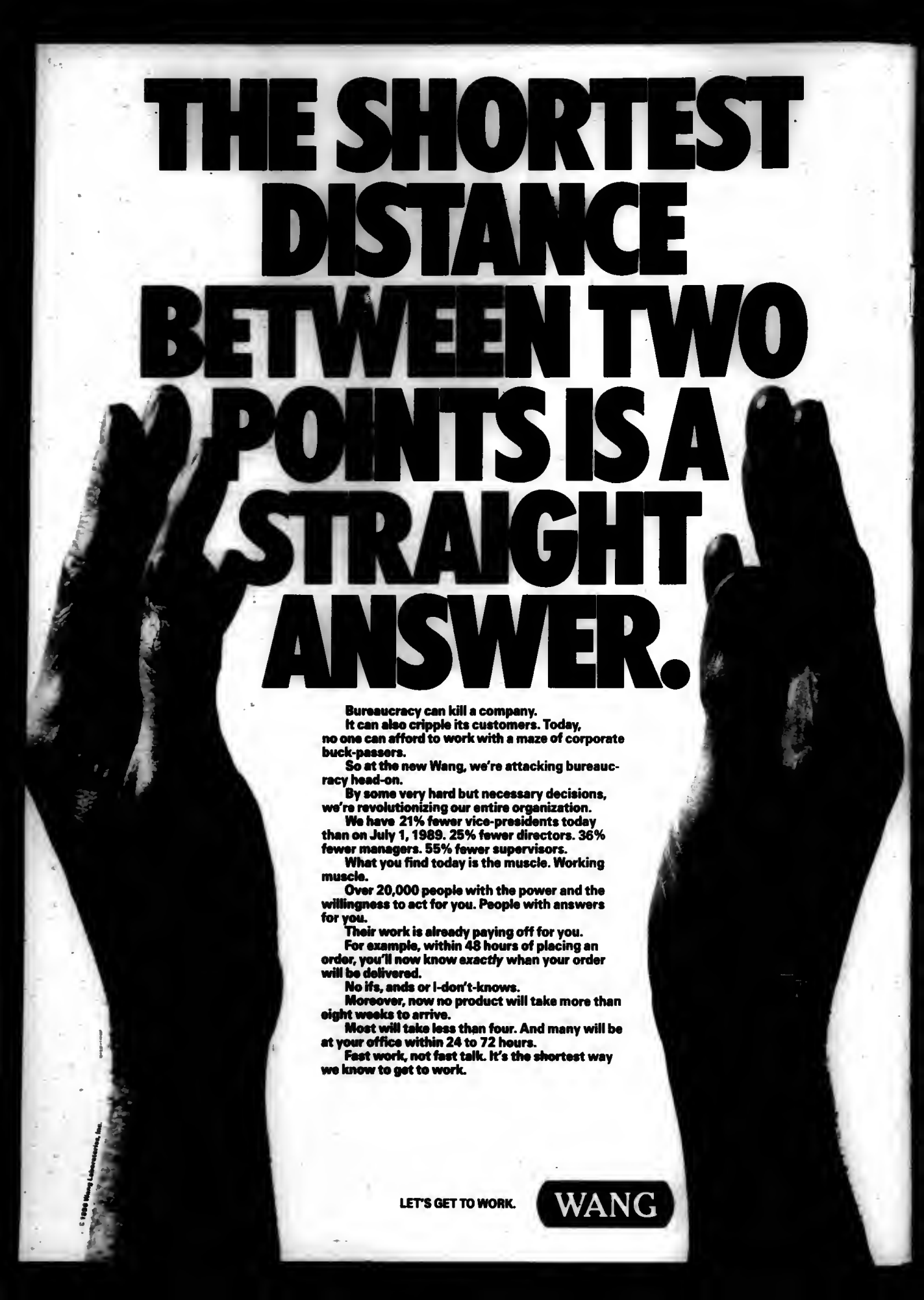

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